TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

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BLACKWATER FEVER.

i. BLANCHARD (M.) & LEFROU (G.). **Sur un spirochète trouvé dans le sang de cas de fièvre bilieuse hémoglobinurique et son action pathogène.**—*C. R. Acad. Sci.* 1922. Oct. 9. Vol. 179. No. 15. pp. 602–604.

ii. ——. **Présence de spirochètes dans le sang d'européens atteints de fièvre bilieuse hémoglobinurique. Le problème étiologique de cette spirochétose.**—*Bull. Soc. Path. Exot.* 1922. Oct. 11. Vol. 15. No. 8. pp. 699–722.

iii. WENYON (C. M.). **Spirochaetes in Blackwater Fever: French Work in the Belgian Congo.**—*Lancet.* 1922. Dec. 23. pp. 1346–1347.

i. and ii. The first two papers deal with the same matter.

The authors note that hitherto the search for spirochaetes in blackwater fever has not been attended with much success. They record that NOC and ESQUIER [this *Bulletin*, Vol. 17, p. 369] found spirochaetes, 22–24 μ long, in the liver of a European who died of blackwater at Dakar, but this post-mortem discovery did not permit of any deduction, as the patient likewise harboured Plasmodium. The observation of SCHÜFFNER [this *Bulletin*, Vol. 13, p. 300] is more important. It relates to the case of a Javanese who, in the course of an attack of epidemic jaundice, developed haemoglobinuria and died. Examination of the blood showed rare *P. falciparum* and numerous spirochaetes morphologically identical with the *Spirochaeta icterohaemorrhagiae* of INADO and IDO. Inoculation into a guinea-pig produced only a slight rise of temperature, and transmission into other guinea-pigs failed. SCHÜFFNER considered that he was dealing with a new type, *S. icterohaemoglobinuriae*. Unfortunately, however, the case was not typical blackwater, and Blanchard and Lefrou state that the specific etiology of blackwater still remained unsolved.

Whilst engaged on their work on haemorrhagic jaundice and relapsing fever, the authors had occasion to utilize the method of triple centrifugation of the blood—a method in common use at Brazzaville for the diagnosis of sleeping sickness—and an opportunity arose to examine the blood of Europeans suffering from blackwater fever by the same method.

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The exact technique used by the authors is as follows :—

About 10 cc. of venous blood was collected into a centrifuge tube containing 1 cc. of 20 per cent. sodium citrate solution sterilized in an autoclave, and the mixture well shaken to prevent coagulation.

The blood is then subjected to three successive centrifugations, each of a duration of about 10 minutes, in a hand centrifuge at a speed of 1,500 revolutions—about 65 turns of the handle per minute.

1. The first results in the separation from the plasma of the greater portion of the red cells. The centrifuge should be stopped when the liquid is separated into two distinct layers—the lower red consisting of erythrocytes and the other amber consisting of plasma.

2. Withdraw the supernatant layer by means of a pipette and teat and transfer to a second tube and centrifuge until there is a distinct light red deposit : this consists of red cells, leucocytes and platelets.

3. Decant, by pouring, the supernatant fluid into a third tube and centrifuge until a slight white deposit is obtained : this deposit, if the operations have been properly performed, consists only of platelets and an occasional red cell. It contains the spirochaetes.

This deposit is removed by a fine pipette, the tube being inverted and almost vertical, so as to have as little dilution as possible, and is examined either fresh by means of the ultramicroscope or after staining.

By means of this technique the authors succeeded in finding spirochaetes in the blood of two cases of blackwater fever. In the first case—a Swiss who had lived in the Congo for five years—the organisms were found on the fourth day of the disease, and in the second case—a Frenchman who had lived in the Congo since 1919—the spirochaetes were found also on the fourth day.

In preparations stained with Leishman the parasites were 6–9 μ long and 0·1–0·2 μ broad with three or four undulations. Certain specimens exhibited a series of nodosities suggesting very fine spirals, but this could not be further investigated in the absence of the ultramicroscope.

The deposit obtained by the triple centrifugation of the blood of the first patient on the fourth day of the disease was suspended in the patient's citrated serum and 1 cc. of this was inoculated into each of two guinea-pigs. The first, inoculated subcutaneously, died in 20 days without becoming infected ; the second, inoculated intraperitoneally, died in 48 hours without icterus, haemoglobinuria or albuminuria, but scanty spirochaetes were found in its liver, which was emulsified and inoculated into guinea-pig 4. This animal died in 48 hours with distended abdomen, but without haematuria or icterus ; spirochaetes were found in its blood and lungs, but not in the liver. The third passage resulted from inoculation of emulsion of the lungs into guinea-pig 6, which also died in 48 hours without icterus. The blood examined some hours before death showed numerous spirochaetes. The autopsy revealed the peritoneal cavity filled with blood, and the bladder was filled with bloody urine partially haemolysed ; the kidneys were very congested and contained plugs ; numerous spirochaetes were found in the blood and in the liver and a single one in the kidneys. By subinoculation the injection was carried on until the tenth passage, when it was lost. In a similar way guinea-pigs were infected from this patient on the eighth day of the disease and the infection was carried on to the fifth passage, when it was lost. Attempts to infect guinea-pigs from the second case on the fourth day of the disease failed.

Experiments suggest that the serum of the patient exerted a certain amount of protective action for guinea-pigs. Attempts at culture on artificial media failed.

In a table the authors contrast the characters of the following spirochaetoses: (1) Recurrent fever due to ectoparasites; (2) Tick fever; (3) Icterohaemorrhagica; (4) Yellow fever; (5) Bilious haemorrhagic fever of the Congo; (6) Infectious icterus of the Congo.

The conclusion is that blackwater fever appears to be a syndrome due to divers causes, amongst which *Spirochaeta biliohaemoglobinuriae* is a nosological entity.

iii. In this article Wenyon reviews the work that has hitherto been done on the subject of spirochaetes in blackwater fever. He points out that the observations recorded by BLANCHARD and LEFROU are certain to lead to many investigations along similar lines, so that we may confidently expect that very shortly the position of *Spirochaeta biliohaemoglobinuriae* in its relation to blackwater fever will be established.

W. Yorke.

CONNELL (R. E. W.). **A Case of Blackwater Fever complicated by Retinal Haemorrhage.**—*Jl. Trop. Med. & Hyg.* 1922. Dec. 1. Vol. 25. No. 23. pp. 378–379. With 2 charts in text.

The patient, a European, aged 26, had no tropical experience previous to his arrival in Uganda 16 months before his attack of blackwater. On 8th June, 1922, he had a severe attack of malaria (*P. falciparum*); he was discharged from hospital on June 12, and two days later developed blackwater fever. The illness was severe, haemoglobinuria lasting until June 20, when the patient complained of the vision of the right eye. On June 22 there was a rigor, and *P. falciparum* was again found in the blood. Euquinine, grs. 5, was given in the evening and three doses of the same amount next day; late in the evening there was a rigor and haemoglobin again appeared in the urine. On June 27 the temperature was normal and convalescence definitely set in.

The ocular symptoms began on June 20, when the patient complained of a dark spot in the centre of the eye, which at eight feet distance was found to cover a roughly circular area six inches in diameter. On June 22 the scotoma was larger but not so dense, and the eye was examined under atropine and a paracentral haemorrhage detected. The condition gradually improved, until on August 20 the haemorrhage could not be detected by the author.

W. Y.

PATRICK (Adam). **Notes on a Case of Blackwater Fever.**—*Ann. Trop. Med. & Parasit.* 1922. Dec. 30. Vol. 16. No. 4. pp. 451–455.

Details are given of a case of blackwater. The author refers to a number of questions raised by the reviewer recently in a critical review on the pathology of the disease [this *Bulletin*, Vol. 19, p. 631]. He shows that in the present case the specific gravity of the urine was between 1015 and 1025 during passage of blackwater. He further remarks that the serum was at the time dark red in colour. A further point of interest is the fact that an increase in the blood urea was noted at the end of quite a short period of suppression of urine.

W. Y

BECK (Rudolph). **Ueber Therapie und Pathologie des Schwarzwasserfiebers.** [On the Therapy and Pathology of Blackwater Fever.]—*Muench. Med. Woch.* 1922. Sept. 22. Vol. 69. No. 38. pp. 1381–1382.

A record is given of ten cases of blackwater fever observed by the author and by MÜLLERN, all of which were treated by the method recommended by MATKO [this *Bulletin*, Vol. 12, p. 358] i.e. by intravenous injection of 100–200 cc. of a watery solution containing 3 per cent. of disodium phosphate and sodium chloride: of the ten treated, nine recovered and one, who was moribund at the time of treatment, died. The author concludes from this that MATKO's method is a great advance in the therapy of the disease.

The exact manner in which the phosphate solution acts is still obscure. In contradistinction to paroxysmal haemoglobinuria autolysin is not found in the blood of blackwater cases. NOCHT has advanced the view that in the latter condition the haemolytic bodies are to be found in the internal organs, notably in the spleen. In support of this theory, reference is made to JOANNOVICZ's observation that toluylendiamine poisoning produces haemorrhages in normal animals, but if the spleen be previously removed then haemoglobinuria is observed. One cannot forget the long recognized fact that sometimes, in non-malarial cases, quite small doses of quinine (0·1 gm.) result in severe or even fatal haemorrhage from the skin, nose, mouth or intestine. FREUND, in the discussion which followed MATKO's paper, pointed out that in malaria during the fever the excretion of chlorine is doubled, but after the fever it is less than normal, as is also that of the phosphates. It is believed that leucocytes and muscle cells bind the phosphates for a time and so remove them from the blood. This results in striking osmotic anomalies in malaria, so that the smallest amount of a haemolytic substance may result in haemolysis. It is with the object of overcoming these osmotic changes that MATKO injects his disodium phosphate saline solution.

Since, however, the administration of lytic substances—quinine, antipyrin, phenacetin, methylene-blue—does not produce blackwater in every malarial case, the author entertains the view that, in addition, a special constitutional condition is necessary; this must exist in the blood-forming or blood-destroying organs of which the spleen is the most likely. W. Y.

BOYÉ. **L'emploi du sérum anti-venimeux de Calmette dans le traitement de l'hémoglobinurie de la fièvre bilieuse hémoglobinurique.**—*Ann. de Méd. et de Pharm. Colon.* 1922. Sept.–Oct.–Nov.–Dec. Vol. 20. No. 3. pp. 334–341.

In a previous note [see this *Bulletin*, Vol. 2, p. 569; *Bull. Soc. Méd.-chir. de l'Indochine*, 10 Sept., 1911] a record is given of a case of blackwater in an Annamite in whom the haemoglobinuria disappeared some hours after injection of anti-venom serum of CALMETTE.

Details are here given of two further cases treated by the same method with equal success at Brazzaville: the first case had 10 cc. of the serum subcutaneously, and the second 10 cc. subcutaneously and six hours later 10 cc. intravenously. A little later, another case was similarly treated with 20 cc. of the serum subcutaneously, and here again the urine rapidly cleared. The author believes that the treatment is of great value in blackwater fever.

W. Y.

PLAGUE.

VASSALLO (S. M.). **A Report on Plague in the Bukedi District.**—*Uganda Protectorate Ann. Med. & San. Rep. for the Year ended 31st December*, 1921. pp. 96–99.

The plague infection is ascribed to *R. coucha* ("Nsolima") which first made a definite appearance in the district in 1919. [*Cf.* Plague: A Review, this *Bulletin*, Vol. 19, pp. 541–545.] It was brought to Mjanji in bags of rice which were sent to this district for famine relief. The bulk of the rice came from Jinja. The extensive cultivation of cotton in this district has provided the Nsolima with undoubted facilities for thriving. Cotton offers a very good nest and the cotton seed provides excellent nourishment. The natives state that this rat is bigger and stronger than "musonse" and "emende" previously found, and drives them away. Referring to the epidemic of 1920–21 the author writes:—

"The history of the epidemic is also quite clear. Three men, all Kavirondo, crossed over from Kenya in May 1920; one went to Sidukumi, where he died five days later, and another to Lumino, where he also died. The third man could not be traced. From the description of the disease both deaths were obviously due to plague, and it was from the death at Sidukumi that the outbreak dated."

. . . . .

"Treatment.—This is only of value in sporadic cases, as during epidemics time is much more usefully employed in preventing fresh cases and so saving the able-bodied." [Certainly! Prevention is of great importance but a properly prepared anti-plague serum in large doses and employed early will save many lives.]

"(1) Inoculation.—This I believe to be of no value; last year Bugwe and Samia were inoculated twice and in parts three times over, without in any way checking the disease. The same was noticed this year in Budama, and so inoculations were to a large extent discontinued." [*Cf.* BAKER (C. J.) and ALLAIN, this *Bulletin*, Vol. 19, pp. 368 and 370.]

The author found quarantine and the evacuation of infected houses with destruction of rats most useful in combating the outbreak.

J. H. Tull Walsh.

DOBREITZER (I. A.). [**Plague on the Russian Frontiers in 1920–1921.**]—*Hygiene & Epidemiol.* Moscow. 1922. Aug. No. 1. p. 92. (Russian Text.)

During the years 1920 and 1921 outbreaks of plague occurred in different border-regions of Asiatic and European Russia; a heavy outbreak in Manchuria (4,500 deaths) spreading to the Far Eastern Republic (E. Siberia and Maritime Province); smaller outbreaks on the Perso-Turkestan frontier, and in the Black-Sea region (Caucasus); another outbreak in the Kirghiz republic (Trans-Volga region).

The Manchurian epidemic originated in the steppes and, as in former years, was preceded by epizootics amongst different rodents, chiefly tarabagans (*Arctomys*), which transmitted the infection in the first place to Chinese trappers. It started at Khailar, and spread northwards, along the right bank of the river Argun; to the north-west, in the direction of Chita; and to the south-east—towards Vladivostock. In the Argun region 17 cases of bubonic plague occurred in the autumn of 1920, and 34 in February 1921. In the north-western direction a heavy epidemic of pneumonic plague broke out in the Dalai-Nor mines and in the settlement Manchuria (Manchouli) and lasted from

October 1920 till the middle of February 1921 ; altogether upwards of 2,000 cases were recorded. The south-eastern wave involved nearly the whole population of the province of Tsitsihar ; it reached Kharbin in February 1921, where 1,000 cases were recorded, and Vladivostock (228 cases) in April. In summer the outbreaks ceased, but in August 1921 they recurred in the same regions.

On the Russo-Persian frontier 38 cases occurred in 1921 ; they were all confined to the region of Sarakhs (153 sq. miles). In the Caucasus 70 cases of bubonic plague were recorded in Batoum (1920) and 7 cases in Novorossiysk (1921). Infection was apparently introduced by ship from Constantinople.

In the Kirghiz steppes an epidemic lasted from July 1921, till February 1922. The number of cases was 23 (18 bubonic plague, 3 pneumonic, 1 pneumo-bubonic and 1 cutaneous).

C. A. Hoare.

ZABOLOTNY. **Die Pestherde in Südost-Russland und der Mandschurei.** [Plague Foci in South-East Russia and Manchuria.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1922. Vol. 26. No. 12. pp. 380–383.

Gives statistics for several years in various foci around which epidemics occurred between 1899 and 1913. The author also describes the treatment adopted, including anti-plague serum. Prophylactic vaccination was carried out. For bubonic plague the serum was very useful and the death-rate was reduced to 10–20 per cent., half the previous figures.

J. H. T. W.

CHUN (J. W. H.). **Salient Points about the Recent Pneumonic Plague in Harbin.**—*Nat. Med. Jl. China.* 1922. June. Vol. 8. No. 2. pp. 71–82. With folding chart and 1 plan.

This paper was read to the National Medical Association of China, at Shanghai, in February, 1922. The author first points out that in the epidemic of 1910–11, 7,000 cases of pneumonic plague occurred in Harbin, all fatal. By 1920 a great change had taken place and a permanent anti-plague service existed. The Chinese authorities, the Russian doctors and the staff of the Chinese Eastern Railway also helped with such good effect that in the epidemic of that year only 54 deaths among the pneumonic plague cases occurred. [See this *Bulletin*, Vol. 19, p. 372. (WU LIEN TEH) ; p. 541–545 (Review of Plague).]

J. H. T. W.

JETTMAR (H. M.). **Erfahrungen ueber die Pest in Transbaikalien.** [Plague in the Trans-Baikal Country.]—*Ztschr. f. Hyg. u. Infektionskr.* 1923. Vol. 97. No. 3–4. pp. 322–329. With 1 map in text.

The author describes an outbreak of plague among the tarabagan hunters in 1920, which subsequently carried infection into Manchuria, causing the outbreak of pneumonic plague of 1921. The rodents implicated were *Arctomys bobac*, carrying the flea Ceratophyllus, *Spermophilus dahuricus* with *C. tesquorum*, and *Ochotoma dahurica*, also carrying species of Ceratophyllus, together with the steppe hamster and *M. musculus*. The mortality among these rodents when experimentally infected was high, especially among tarabagans.

J. H. T. W.

i. NIKANOROFF (S.). **A la question du rôle des chameaux dans l'épidémiologie de peste dans la région d'Astrakan.**—*Rev. Microbiol. et Epidémiol.* Saratov. 1922. Vol. 1. No. 2. pp. 178–179.

ii. ——. **Les souris comme porteurs de la peste.**—*Ibid.* Vol. 1. No. 1. pp. 71–72.

iii. ——. **L'épidémie de peste dans le rayon de Talovka de Kirghiz du mois d'août de 1921 au mois de janvier 1922.**—*Ibid.* Vol. 1. No. 1. p. 76. [All in Russian. Abridged versions in French.]

i. From results obtained with various methods of infection the author considers that camels may be subject to plague and may transmit the disease: (1) Subcutaneous inoculation with *B. pestis* produced bubonic plague and death in old or feeble animals; (2) Ingestion of cultures produced diarrhoea, with swelling of lymphatic glands of the jaw when there was injury to the mouth. Two camels thus infected recovered completely and a third died at the end of 48 days; at the autopsy lesions were found in the rumen, small gut and omentum; (3) Infection by inhalation gave the most sure results; all cases died with symptoms of plague pneumonia confirmed at autopsies.

ii. The author is fortunate in being able to record an epidemic which occurred in 1915 in the Ural District and clearly followed an epizootic among mice. Dead mice were found in large numbers in the bundles of hay which the peasants used for bedding in winter. *B. pestis* was found in these mice. Rats (*M. norvegicus*) were also dying from plague.

iii. During this epidemic in the Karamija region three families were infected. 23 persons suffered, of whom 6 recovered, 16 died and 1 was still ill when the paper was written. 18 of these cases were bubonic plague; 3 pneumonic; 1 with buboes and pneumonia and 1 with cutaneous lesions.

J. H. T. W.

HIRST (L. F.). **Summary of Researches on the Transmission of Plague by Fleas of the Genus Xenopsylla.**—*Jl. Ceylon Branch Brit. Med. Assoc.* 1922. Jan.–April. Vol. 19. Pt. 1. pp. 17–19.

The author writes:—

"The distribution of *X. cheopis* and *X. astia* on rats in their relation to plague within the City of Colombo has been specially investigated during 1921–22. The results are most interesting and may be summarized as follows:—

"*Hot weather collection* 1st April–31st July 1921 from all parts of the town:—

X. cheopis	nil.
X. astia	551

"*Cool weather collection* 24th November–14th February 1921–1922:—

	X. astia.	*X. cheopis.*	*Per cent. cheopis.*
Plague area	791	167	17.43
Non Plague area	824	8	0.96
*Sea Street (January)	169	51	23.18
*Plague House in Sea Beach Lane (14th December) ..	48	41	46.0"

X. brasiliensis has not been found in Ceylon.

[Hirst's results were considered in this *Bulletin*, Vol. 19, p. 542: "Plague: A Review"; see also CRAGG (F. W.), Vol. 18, p. 348.]

J. H. T. W.

* In centre of endemic zone.

HIRST (L. Fabian). **On the Transmission of Plague by Fleas of the Genus Xenopsylla.**—*Indian Jl. Med. Res.* 1923. Jan. Vol. 10. No. 3. pp. 789–820. With 1 plate.

A detailed review of earlier work on investigations as to the transmission of plague infection by various fleas, with the author's records of plague in relation to the genus *Xenopsylla*. Areas in which plague was absent or slight produced more *X. astia* than *X. cheopis* or, as in the "off plague season," April 1 to July 31, 1921, in Colombo, *astia* only on the *R. rattus* and *R. norvegicus* examined by the author. The author concludes from his experience that: "If *X. astia* is not a true plague flea the relative immunity from plague of certain parts of Colombo, and many parts of India, where the rat fleas are nearly all of this species, is readily explicable." [*Cf.* CRAGG, this *Bulletin*, Vol. 18, p. 348.]

J. H. T. W.

SWELLENGREBEL (N. H.). **Moet aan de rat, in de epidemiologie van de pest, een minder belangrijke rol worden toegekend?** [Should a less Important Part be ascribed to the Rat in the Epidemiology of Plague?]—*Nederl. Tijdschr. v. Geneesk.* 1922. Vol. 66. 1st Half. No. 20. pp. 1968–1972.

The author disputes the views of HYLKEMA [this *Bulletin*, Vol. 19, p. 373], who thinks that in European plague epidemics the human flea may be the common transmitting agent.

In the minor transport of goods in the tropics the rat flea very probably is more important than the rat. But the rat flea (*X. cheopis*) is before all a parasite of the rat and will after transport with goods try again to find the local rats and eventually infect them with plague.

Experimentally the plague bacillus is found to be transmitted by the human flea and the bed bug, but there is no evidence yet of their importance under natural circumstances.

The recognition of rat plague offers considerable technical difficulties, especially if it concerns the more savage *Mus norvegicus*. Therefore it is of great importance that at last rat plague has been recognized in Paris.

If the human flea were responsible for the direct spread of plague from man to man, the author thinks the course of the former epidemics in Europe would have shown more likeness than it actually does to the explosive outbreaks of other diseases transmitted by human ectoparasites (typhus fever).

Pulex irritans, rare in the Dutch East Indies, is common in Bombay.* Plague, however, was never transmitted there in the native plague hospitals, though the patients are looked after by many friends and relatives carrying fleas.

Though theoretically the possibility of the human flea acting as a plague carrier must be admitted, the significance of the rat in the epidemiology of plague has not been derogated. Yet in practice it may be useful to reckon also with the human flea when planning measures against plague [*vide* BACOT, this *Bulletin*, Vol. 16, p. 45; also "Review," Vol. 19, p. 541.]

W. J. Bais.

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* *Jl. Hygiene*, Vol. 7, p. 475; Vol. 8, p. 247, where it is stated:—"We had frequent opportunities for discerning this species of flea [*P. irritans*] in the houses we visited in Bombay, in some of which it was present in such large numbers that we had only to enter the houses for a few seconds to find our legs covered with them."

BORDAS, DUBIEF & TANON. **Quelques considérations sur la peste et sur les rats : le rat réservoir de virus.**—*Presse Méd.* 1922. Sept. 27. Vol. 30. No. 77. pp. 831–833.

There has been much discussion in Paris during the spring concerning plague and rats and some have thought it possible to predict the reappearance of the small epidemic stamped out in October [this *Bulletin*, Vol. 17, p. 392, GUINON (L.), etc. ; Vol. 18, p. 348, TEISSIER (P.), etc.] because some of the rats were still carriers. The contrary, however, has occurred. While there have been no more human cases the number of carrier-rats has increased.

Between July, 1921, and January, 1922, the authors found the plague bacillus in 29 rats out of 5,000 examined. The commonest sites in which *B. pestis* was found were the spleen, the liver and the lymphatic glands in the order given, the spleen containing the greatest number. Most of these carrier-rats were alive when they arrived at the laboratory. They showed no signs of illness and it is surprising that at the autopsy no typical lesions are seen as a rule. Buboes were seen in only 6 of the 29. Inoculations were made from these carriers into white mice, guinea-pigs and white rats. The white mice died after periods of 5 to 11 days, feverish and torpid ; the rats and guinea-pigs in 11 to 14 days, being much more resistant than the mice. These carrier-rats may give rise to an epizootic of rat plague under favourable circumstances, such as want or overcrowding, etc. Some think the passage of the bacillus through *X. cheopis* or other plague flea necessary, but of this proof is difficult, and the authors make the statement without further discussion.

J. H. T. W.

HOESEN (H. W.). [In Dutch & English.] **Gegevens omtrant de indicatoren der Rattepest op Java. Rat-plague Indicators on Java.** —*Meded. Burgelijk. Geneesk. Dienst. in Nederl.-Indie.* 1920. Pt. 8. pp. 2–89. With 2 maps.

Much of the work in this paper has been noted from other sources since 1920. The attempt to fix a mathematical relation between fleas and rats during epizootics is not of great practical value. According to the author direct indicators of rat plague are : Rats suffering from plague, human plague sufferers and fleas charged with plague bacilli. The first to be treated are the fleas. *Pygiopsylla ahalae*, which is a plague carrier and bites man [BACOT, see this *Bulletin*, Vol. 16, p. 45], was found in the villages on the slopes of Mount Wilis, and elsewhere in Java. In order to test the duration of infectivity of fleas a densely populated flea nursery was infected by a few plague-infected guinea-pigs. After the death of these animals fresh ones were put in. According to these experiments the rat-flea's infectivity was at Kediri : 1st series, 33 days ; 2nd series, 29 days. 42 and 38 days after the first experiments and 68 days after the second series, 235 fleas were pounded up and inoculated into animals without resulting plague. 13,481 fleas were obtained from various villages from 2,404 rats. From villages giving a positive result for flea infection an average of 522 fleas was inoculated for each guinea-pig that died of plague. The maps show places in which plague prevailed. The chart opposite page 66 gives the flea index.

J. H. T. W.

JOLTRAIN (E.) & DE GENNES (L.). **"La Peste." Formes cliniques diagnostic et traitement.**—*Ann. de Méd.* Paris. 1922. May. Vol. 11. No. 5. pp. 422–434.

An interesting, well-written paper dealing, in detail, with the various clinical forms of plague, their diagnosis and treatment. The epidemic to which the authors refer has already been noticed in this *Bulletin* [Vol. 17, p. 392; GUINON and others; Vol. 18, p. 348, TEISSIER (P.), and others.]

The authors are impressed with the value of anti-plague serum used in 100 to 200 cc. doses as early as possible: "Serotherapy in the bubonic form should save the patient if employed early. To a delayed diagnosis, or a too timid treatment, must be attributed many fatal cases." The authors consider that the search for precipitins is too delicate a test to be of practical value.

J. H. T. W.

MATHIS (C.). **Réceptivité du nourrisson à la peste septicémique.**—*Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. pp. 920–926.

The author states that there is little recorded concerning plague in infants. He quotes MAHÉ, LE DANTEC, SIMOND, etc., to show that children under five years rarely suffer from recognizable plague. Dr. Mathis agrees with most authors that buboes are rare in infants under five years of age. Out of 47 infants dying of plague (MENAUT and BOUVAIST) buboes were only found in two, one aged eight months and the other four years.

J. H. T. W.

LOMBARDO (G.). **Su la polmonite nei pestosi.**—*Pathologica.* 1922. Aug. 15. Vol. 14. No. 330. pp. 498–502.

The cases are of importance as showing how difficult it may be to detect sporadic cases of pneumonic plague, especially when mixed with pneumonia due to the pneumococcus. In November, 1920, a young girl died in six days with symptoms of croupous pneumonia and there was no suspicion of possible danger to others from infection. Eight days later the mother died with similar symptoms; and the father died after seven days. Bacteriological examinations showed pneumococci in the lungs, plague bacilli in the spleen; there was enlargement of the inguinal glands not amounting to buboes. The author gives a fairly long list of papers on pneumonic plague.

J. H. T. W.

LEGER (Marcel) & LHEURRE. **Persistance anormale du bacille de Yersin chez un pesteux bubonique.**—*Bull. Soc. Path. Exot.* 1922. Oct. 11. Vol. 15. No. 8. pp. 759–762.

"The easy destruction of the plague bacillus is a classical idea: destruction by light, by heat, by antiseptics. The germ, write JEANSELME and RIST (Précis de Pathologie exotique, p. 224), disappears early from the suppurated buboes, where we find generally only the common staphylococci." Other quotations occur to the same effect.

"The following case seen recently by us in the Indigenous Hospital for Instruction, Dakar, leads to counsels of reserve :—

"D.K., aged 28, guard, working at Conakry (French Guinea) disembarked at Dakar, May 13th, 1922. He formed part of an escort bringing prisoners from Conakry. He lodged with the warders of the Dakar jail. On May 20th, D.K. was admitted to hospital with a voluminous glandular swelling in the right groin. Temperature 37·8° C. Pulse 88. No lesion found in leg or groin through which infection might have entered. The bubo was at once punctured and coco-bacilli resembling Yersin's bacillus were found. Between the 21st and 25th May the patient received intravenous injections of anti-plague serum : 60 cc. on the 21st, 23rd, and 25th. The temperature fell after the first injection and remained normal. The wound in the bubo was washed with permanganate of potassium 1/1000 and dressed at first with ether iodoform and later with Reclus ointment. On June 27th D.K. was considered cured, clinically. A bacteriological examination made on June 28th showed that *B. pestis* was still present. A first culture was spoiled by the invasion of *B. subtilis*. A second and third culture made from the patient gave *B. pestis*. With the serum of D.K. agglutination 1 : 20 took place ; but no agglutination with serum taken from other men. One *M. rattus* and one white rat were inoculated : they died on the ninth day. Thus such a case may become a chronic 'carrier.'"

J. H. T. W.

GONZAGA (A. Gavião). **Importancia da hemocultura para o diagnostico da peste. Frequencia da pesticemia.** [The Importance of Blood Culture in the Diagnosis of Plague. Frequency of *B. pestis* Septicaemia.]—*Brazil Médico.* 1922. Feb. 11. Year 36. Vol. 1. No. 6. pp. 69–73. With 6 text figs.

Bacillus pestis occurs in the blood in ordinary bubonic plague, and blood culture should, therefore, be employed as a means of early diagnosis of the disease. The bacillaemia is not, as is generally believed, merely a terminal event.

Six cases are quoted in some detail, examples of a number under the author's care. Positive cultures were obtained from each and in two patients who came under observation early the buboes did not appear until 48 hours after the positive blood specimens were taken. All six made a good recovery, thus showing that the bacillaemia does not warrant a gloomy prognosis.

H. Harold Scott.

PERGOLA (M.). **Contributo all'importanza della termoprecipitazione nell' accertamento diagnostico della peste.**—*Policlinico.* Sez. Med. 1922. Nov. 1. Vol. 29. No. 11. pp. 610–614.

Records assistance in diagnosis given by the "thermoprecipitin" test in a case following two, in the same family, from pneumonia. A girl died of pneumonia, but only pneumococci were found ; the mother was next attacked and died, but again only pneumococci. When the father became infected and died the author suspected plague infection and resorted to the search for a specific "precipitin," with positive result [*cf.* JOLTRAIN, above.].

J. H. T. W.

BOMBAY. **Report of the Bombay Bacteriological Laboratory for the Year 1921.**—[LISTON (William Glen.), Director.]—8 pp. 1922. Bombay, Govt. Central Press. [Price 2½ annas.]

Since the opening of the laboratory in 1896, 21,142,100 doses of anti-plague vaccine have been sent out. This number includes 823,230 doses sent out during 1921. The dose of vaccine is reckoned as 4·0 cc., but when used within three months of the date of manufacture a dose of only 3·0 cc. is recommended. During 1921, 698,647 rats were received; of this number 215,511 were alive and 483,136 were dead. Of the latter number 347,386 were examined and 11,721 were found to be infected with plague. The human plague mortality was 677.

[For notice of Report for 1920, see this *Bulletin*, Vol. 19, p. 733.]

J. H. T. W.

LEGER (Marcel) & BAURY (A.). **Sur un Coccobacille pseudo-pesteux extrêmement virulent.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 862–865.

This is a Gram-negative microbe resembling morphologically the plague bacillus of YERSIN; but it does not cause epidemic disease although it is as fatal for rabbits and other rodents, if not more virulent, than virulent plague bacilli.

"The germ that we have isolated from a miliary abscess of the kidney in a negro from Senegal is neither the plague bacillus, nor one of the pathogenic *Pasteurella* described from man, in particular *P. Bouffardi* which in Senegal causes multiple abscesses, often fatal: nor is it the cocco-bacillus "en navettes" [shuttle-shaped] formerly found by us in the blood of a man who died of suppurative hepatitis. We have not been able to identify it with any known bacillus." They call it *B. pessimus* (n. sp.).

J. H. T. W.

HYLKEMA (B.). [*Bacillus pseudotuberculosis rodentium* **et la peste chronique.**]—**Extrait du Rapport sur l'activité du Laboratoire central d'Hygiène publique des Pays-Bas pour 1921, publié dans** *Versl. en Mededeel. betr. de Volksgezondheid.* 1922. July. p. 553. [Summarized in *Bull. Office Internat. d' Hyg. publique.* 1922. Aug. Vol. 14. No. 8. p. 957.]

Relates in general to pseudotuberculosis in rats and in particular to one rat from a ship in the port of Rotterdam. Diagnosis of pseudotuberculosis was in this case confirmed by inoculating guinea-pigs in which the usual lesions were reproduced. A culture of *B. ps. rodentium* was made from the spleen of this rat and was virulently fatal to white mice, but in these animals it produced pathological conditions resembling plague. Moreover from their organs a bacillus was obtained indistinguishable from *B. pestis.*

[Is it not possible that the plague bacillus was present in the rat referred to as well as that of pseudotuberculosis? See Sectional Editor's note to URIARTE (L.), Vol. 19, pp. 726-727; also de FARIA.]

J. H. T. W.

i. Fusco (G.) & Patané (C. G.). **Sulla fina struttura del bacillo della peste. (Nota preventiva.)**—*Pathologica.* 1922. Sept. 15. Vol. 14. No. 332. p. 570. With 1 text fig.

ii. Allain. **La seconde épidémie de peste de Tananarive (novembre 1921–février 1922).**—*Ann. de Méd. et. de Pharm. colon.* Paris. 1922. Sept.–Oct.–Nov.–Dec. Vol. 20. No. 3. pp. 308–333.

iii. McCoy (George W.). **Some Features of Plague.**—*U.S. Nav. Med. Bull.* 1922. Sept. Vol. 17. No. 3. pp. 386–394.

iv. Lhuerre (H.). **La Peste à Dakar : Étude clinique et thérapeutique. Période endémo épidémique : Octobre 1921–Octobre 1922.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 874–906.

v. Wu Lien Teh, Chun (J. W. H.) & Pollitzer (R.). **Clinical Observations upon the Second Manchurian Plague Epidemic, 1920–1921.**—*Nat. Med. Jl. China.* 1922. Dec. Vol. 8. No. 4. pp. 225–255.

i. The authors state that ammoniacal solution of methylene blue brings out granules in the body of *B. pestis* as well as at the poles. The microphotograph shows this well.

ii. This report is on the same lines as that on the first epidemic. [Cf. this *Bulletin* Vol. 19, p. 370. De Goyon & Allain ; 370–371, Allain.]

iii. Treats of plague generally. A lecture delivered at the U.S. Naval Medical School Washington D.C.

iv. This is an interesting paper reviewing the work of others from 1914 onwards and giving personal observations of 76 cases. [Plague epidemics in Dakar have already received notice, *vide* this *Bulletin*, Vol. 17, pp. 390–391 (Esquier ; Ambrose) ; Vol. 19, p. 367 (Teppaz & Noc), p. 368 (Rigollet).]

v. This is a detailed report from the Plague Prevention Service Laboratory, Harbin ; interesting, but not new.

J. H. T. W.

Chun (J. W. H.). **Pneumonic Plague in Harbin (Manchurian Epidemic, 1921).**—*China Med. Jl.* 1923. Jan. Vol. 37. No. 1. pp. 7–17. With 1 text fig.

Leger (Marcel) & Baury (A.). **Porteurs sains de bacilles pesteux.**—*C.R. Acad. Sci.* 1922. Oct. 23. Vol. 175. No. 17. pp. 734–736.

Negroni (P.). **I vantaggi della preparazione del siero antipestoso col metodo Lustig-Galeotti.**—*Boll. dell' Istituto Sieroterapico Milanese.* Milan. 1922. Aug. 30. Vol. 2. No. 5. pp. 247–252.

Ohtsuki (Manjiro). [**On the Pathological Anatomical Findings of Pulmonary Plague occurring in North Manchuria in 1921.**]—*Jikken Igaku Zasshi (Jl. Experim. Med.).* 1922. May. Vol. 6. No. 3. [Summarized in *Japan Med. World.* Tokyo. 1922. Oct. 15. Vol. 2. No. 10. p. 299.]

Thoulon. **Les attitudes dans la peste.**—*Bull Soc. Méd.-Chirurg. française de l'Ouest-Africain.* 1920. July. Vol. 2. No. 7. pp. 194–195.

CHOLERA.

HEHIR (Patrick). **The Cholera Epidemic in the North-West Frontier Force, 1919.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1922. June 22. Vol. 16. No. 3. pp. 136–155. With 1 chart.

A well-written account of a cholera epidemic which consisted of outbreaks at various centres. The table on page 138 supplies all the necessary statistical information. It shows that 56 British troops, 504 Indian troops and 1,103 followers were attacked, and that the death-rate in these was 67·5 per cent., about twice that of the troops.

"The supply of ROGERS's hypertonic infusion apparatus to every hospital, with a reserve in the advance depots of medical stores, was a noteworthy feature of the medical arrangements made by G.H.Q.; it is not possible to exaggerate the great utility of this outfit and the marked effect it had on the mortality when it was used early."

The Force Bacteriological Laboratory was at Peshawar, and General Hehir writes: "The excellent work done by this unit was of the highest value to us." Two good portable bacteriological laboratories were also provided.

"The arrangements for the supply of anti-cholera vaccine were made by General Headquarters and must have been perfect. Our force was supplied with 300,000 double doses in about three weeks. I always kept 5,000 double doses in my personal charge to meet any emergency arising; each advanced depot of medical stores kept a reserve in stock."

J. H. Tull Walsh.

BLOCH (T. S.). [**Cholera in Russia in 1920–21.**]—*Hygiene and Epidemiology.* Moscow. Aug. 1922. No. 1. p. 77. (Russian Text.)

The recent cholera epidemics are traced to 1904, when infection was introduced from Persia to the Transcaspian region. The 18 years' chain of epidemics that followed is divided into two periods: from 1904 to 1913, and from 1914 to the present.

The first period reached its maximum in 1910, when 230,232 persons in 72 provinces were affected; in 1912 the wave fell to a minimum of 9 cases in two provinces. The year 1914 marks the beginning of a new rise. The redistribution of the mobilized population for war created favourable conditions for the dissemination of cholera. The south-western front was the region most affected (7,768 cases in the army). In 1915 the epidemic spread from the army to the civil population, the number of cases rising to 44,400. In 1916 and 1917 there was a fall, attributable partly to better sanitary conditions in the army, but chiefly to compulsory anti-cholera vaccination. In 1918 the epidemic again rose high (41,247 cases), and spread over 37 provinces in all parts of Russia. In 1919 the outbreaks subsided (3,830 cases); but remained distributed over a wide area.

In 1920 cholera was prevalent all the year round, with two maxima—in March and in August. The number of cases recorded was 25,711,*

* This figure does not include the incidence in the Red Army.—C. A. H.

distributed all over European Russia, Middle Asia (Turkestan), part of Siberia (Tomsk Province), and the Caucasus. The movements of armies and refugees during the civil war favoured dissemination.

The most characteristic feature of the epidemics in 1919–20 was the abundance of winter outbreaks.

In 1921 Russia experienced one of the severest outbreaks of cholera in the present century, second only to the epidemic of 1910. The chief foci were in the South-east (Transvolga Provinces) and in Central Russia (Voronej Province). Altogether 207,389 cases were recorded, with a death-rate of 44·8 per cent.

No infections were traceable to water, and the author thinks this may be due to a biological degeneration of the cholera vibrio. The chief sources of infection were presented by refugees fleeing from the famine-stricken area ; demobilized soldiers, and food-smugglers ; and the disease spread along the routes of travel by contact [?] especially along the rivers (Volga).

The clinical course of cholera in 1920 and 1921 was atypical, a definite association with typhus and relapsing fever being observed.

C. A. Hoare.

MUTERMILCH (Stefan). **Epidemja cholery w Armji Polskiej i wśród jeńców bolszewickich w 1920–1921. Description de l'épidemie du choléra dans l'Armée Polonaise en 1920–1921.**—*Przegl. Epidemjol.* Warsaw. 1922. Vol. 2. No. 1. pp. 92–104. [French summary p. 105.]

Number of cases of cholera	991
Deaths	547 (55 per cent.)

Two hundred and sixty eight (27 per cent. of total cases) were found to be healthy carriers.

J. H. T. W.

GOSS (M.). **Choléra sans vibrions (bactériolyse et collapsus).**—*Bull. de l'Administration sanitaire des Frontières.* Constantinople. 1922. Oct. 5. No. 25. pp. 541–543.

The summer and autumn epidemic of 1920–21 in Russia was generally mild in type, although hundreds and, rarely, thousands suffered. It remained mild until June, 1922, when it became more virulent. This change occurred after a period of famine, but the author does not think lack of food had much influence on the change of type ; he says the causes of increased virulence "are not known" One striking fact observed by the author was that : "in some cases, evidently clinically cholera, cases evolving rapidly with the character of 'foudroyant' cholera, he failed to find any vibrios in the small intestines." This perplexed him, as indeed it might ! His explanation is : "probably the gravity of these cases, their sudden evolution, accounts for the absence of vibrios." "The toxins of the cholera vibrio, true endotoxins, are strongly bound up in the bodies of the microbes and only appear in the surrounding fluids and tissues after the destruction

of the microbes, after their dissolution (bacteriolysis)." [This is such an unusual condition, since the stools of cholera patients generally swarm with vibrios, that it is unfortunate the problem was not solved.]

J. H. T. W.

TSURUMI (M.) & TOYODA (T.). **Cholera Acidosis and its Therapy.**—*Arch. Intern. Med.* 1922. Dec. 15. Vol. 30. No. 6. pp. 797–800.

1. The alkali content of the blood in mild cases of cholera is practically the same as in health. But in severer, and especially in serious cases, a marked decrease of alkali is observed, leading to acidosis.

2. By intravenous injection of alkali (sodium bicarbonate) the blood alkali in cholera is generally increased, temporarily or permanently; that is to say, the number of drops by the stalagmometer (according to Traube's method) increases. The occasional decrease is believed due to increased acid produced in the body and to the great increase of tolerance to alkali in consequence of acidosis in an acute form.

3. The mortality after the injection of sodium bicarbonate saline in 49 cases was 28·4 per cent., while the mortality in 480 cases in which no alkali was given, but saline only, serum, or both, was 42·7 per cent.

J. H. T. W.

SELMON (A. C.). **A Case of Cholera Gravis with Complications.**—*Jl. Amer. Med. Assoc.* 1922. Dec. 2. Vol. 79. No. 23. pp. 1930–1931.

The details of this very interesting and instructive case are :—

Patient, a Chinese woman, aged 35, eight and a half months pregnant, with an active tubercular lesion in one apex and recent haemoptysis. Acute cholera symptoms appeared on Monday night (no date given); rice water stools and much vomiting on Tuesday; almost complete anuria, torturing pains in the calf of the leg, with an uncomfortable, dry, parched feeling in the nose. Mouth temperature 38·5° C., pulse 108 and barely perceptible. Three litres of hypertonic saline were given, made up of sodium chloride 16 gm., potassium chloride 0·8 gm., calcium chloride 0·55 gm., water 1 litre. The temperature of the flask was kept at about 38° C. (100·4° F.). During transfusion the patient became more quiet and the pulse improved markedly. In addition, potassium permanganate 0·13 gm. made up with kaolin and petrolatum into a pill coated with phenyl salicylate; one pill every half-hour for six hours. The stools showed marked improvement after this treatment.

Early on Wednesday morning the patient gave birth to a well-developed stillborn child. No difficulty was experienced in delivery and the blood lost was negligible. Following delivery there was improvement for a few hours and then suddenly exacerbation of cholera symptoms, more severe in the relapse than during the primary attack; systolic blood pressure dropped to 75 mm. An isotonic saline solution was slowly injected into a vein for several hours: two and five-tenths litres in five hours. Artificial heat was applied and another course of 12 potassium permanganate pills. There was prompt improvement in the stools. As the patient rallied the flow of urine started again after having ceased for almost twelve hours. No food of any kind was allowed until 24 hours after the relapse started. Convalescence was complicated with severe gastritis and myocarditis. The stools contained numerous cholera vibrios. The urine passed during the attack had a heavy content of albumin.

J. H. T. W.

i. KABESHIMA (Tamezo). [**On the Fate of Vibrio Cholerae in Pfeiffers's Phenomenon.**]—*Nihon Biseibutsugakkwai Zasshi* (*Jl. of Japan Microbiol. Soc.*). 1922. July. Vol. 16. No. 7. [Summarized in *Japan Med. World.* Tokyo. 1922. Dec. 15. Vol. 2. No. 12. p. 352.]

ii. OHTSUBO (Itsuya). [**Contributions to the Iod-Phenomena in Cholera Vibrio Cultivation.**]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1922. Aug. No. 323. [Summarized in *Japan Med. World. loc. cit,* p. 354.]

i. The author's note is not very clear but conveys the idea that there is a doubt, in his mind, as to the bactericidal action of guinea-pig serum [*cf.* SANARELLI, this *Bulletin,* Vol. 17, p. 401 ; Vol. 19, p. 379.]

ii. In the culture of cholera vibrios a substance that absorbs iodine was found. Albumins that take the iodine colour are digested by the vibrios. The beautiful halo produced in a medium containing starch and iodine is due to digestion of starch by the vibrio [see this *Bulletin,* Vol. 19. p. 380.]

J. H. T. W.

KABESHIMA (Tamezo). [**On Pepton Water of the Proliferation of** *V. cholerae.*]—*Nihon Biseibutsugakkwai Zasshi.* (*Jl. of Japan Microbiol. Soc.*). 1922. May. Vol. 16. No. 5. [Summarized in *Japan Med. World.* Tokyo. 1922. Nov. 15. Vol. 2. No. 11. p. 322.]

The author suggests the following precautions when using commercial peptone. Some peptone sold has a strong acid reaction, while other samples are slightly acid : *e.g.,* " Gehe peptone water " presents such a strong acid reaction that it would almost inhibit the growth of *V. cholerae.* Peptone which requires more than ten degrees phenolphthalein or more than 1·4 per cent. soda to neutralize is no use for culture of cholera vibrios.

J. H. T. W.

KO-RAN. **Special Culture Medium for Cholera Asiatica prepared after a New Method.**—*Taiwan Igakkwai Zasshi* (*Jl. Med. Assoc. of Formosa*). 1922. July. No. 223. (English summary p. 4.) [In Japanese, pp. 35–38.]

The ingredients are :—

Peptone (Witte or Teruuchi) ..	3·0 gm.
Salt	0·5 gm.
Distilled water	10·0 cc.
Agar	3·0 gm.

Dissolve thoroughly by heating, then mix separately :—

Casein or Nutrose	0·5 gm.
Distilled water	10·0 cc.
10 per cent. solution of carbonate of soda (anhydrous)	2·0 cc.

After heating add to the agar solution with 0·1 cc. saturated alcoholic solution of fuchsin. Grown on this medium colonies of cholera vibrios can be distinguished at a glance from *B. coli* and other intestinal bacteria which always accompany them.

J. H. T. W.

SHUNJI (Masaki). [**On the Mechanism of Cholera Infection and on Cholera Immunization per os.**]—*Keio Igaku* (*Keio Med. Jl.*). 1922. June. Vol. 2. No. 6. [Summarized in *Japan Med. World.* Tokyo. 1922. Nov. 15. Vol. 2. No. 11. p. 330.]

Living cholera vibrios were administered to rabbits and guinea-pigs either by the mouth or by inoculation. The injected vibrios passed via the intestinal walls into the small gut, where they proliferated. They then reached the blood through the weakened intestinal tissues. Vibrios administered by the mouth did not produce any effect on the body (bacillaemia). The rabbit sensitized with cattle bile when given either killed or living bacteria produces serum which agglutinates vibrios, the stronger agglutination following doses, *per os*, of killed vibrios.

J. H. T. W.

MASHIMO (Shinichiro). **Cholera Bacteriemia and Appearance of its Bacteria in Bile (Preliminary Report.)**—*Japan Med. World.* Tokyo. 1923. Jan. 15. Vol. 3. No. 1. p. 10.

The author describes some experiments in which bacteriaemia with *V. cholerae* was produced and the vibrios recovered from the bile. Rabbits were used. A virulent culture suspended in physiological salt solution was injected and bile was drawn off through an artificial fistula under aseptic precautions. The lethal dose was 8 mgm. per kilogram of body-weight of rabbit. The vibrios were recovered from the bile in two minutes after the intravenous injection.

J. H. T. W.

SIROTININ (N.). **Zur Frage ueber den Einfluss des** *B. proteus v.* **auf den Gang der Cholerainfektion.** [Influence of *B. proteus v.* on the Course of Cholera Infection.]—*Rev. Microbiol. & Epidemiol.* Saratov. 1922. Vol. 1. No. 3. p. 290.

Rats were infected (1) with *V. cholerae* only, with a 40 per cent. mortality; (2) with *V. cholerae* + *B. proteus v.*, with a death-rate of nearly 80 per cent; and (3) with *B. proteus v.* only. The mortality was slight; but the author thinks that when present it increases the virulence of the cholera vibrios.

J. H. T. W.

CIUCA (M.). **Présence de principe lytique pour le Bacille de Shiga et le Colibacille dans les selles des cholériques.**—*C.R. Soc. Biol.* 1923. Jan. 20. Vol. 88. No. 2. pp. 143–145.

The results of the author's work show "that the intestinal contents in cholera cases, rich in leucocytes, favour the secretion of a body lytic in action against *Bacillus coli* and Shiga's bacillus." "There is no relation between the evolution of the disease and the presence of this principle."

J. H. T. W.

MACKIE (T. J.). **The Serological Relationships of the Paracholera Vibrios to** *Vibrio cholerae,* **and the Serological Races of the Paracholera Group.**—*Brit. Jl. Experim. Path.* 1922. Oct. Vol. 3. No. 5. pp. 231–237.

This paper reviews the work of others and contains original agglutination experiments by the author. The paracholera group represents a considerable number of races differentiated by agglutination reactions.

V. cholerae antiserum exhibits apparent co-agglutination under certain conditions towards *V. paracholerae* A and similar types. A short bibliography is given [*cf.* this *Bulletin*, Vol. 19, p. 738 (KABESHIMA); p. 739 (ODA): Vol. 18, p. 353 (DOUGLAS); p. 69 ("Critical Summary").]

J. H. T. W.

WARASI (W.). **Pathologische Veränderungen der Muskeln bei Cholera asiatica.** [Pathological Alterations of Muscle in Cholera.]—*Deut. Med. Woch.* 1922. Oct. 13. Vol. 48. No. 41. p. 1387.

The author opposes KRAUS's dictum that there are neither macroscopic nor microscopic changes in cholera muscle. He found in early cases of cholera that muscle showed cloudy swelling and waxy (? amyloid) degeneration somewhat similar to the conditions noticed long ago by ZENKER in typhoid fevers.

J. H. T. W.

i. BANERJI (Dhirendra Nath). **A Note on the Total and Differential Leucocyte Counts in Healthy Bengalees and in Cholera.**—Reprinted from *Calcutta Med. Jl.* 1922. Apr. 10 pp.

ii. ——. **Arneth Blood Count in Health and in Cholera.**—*Ibid.* 1921. Dec. Vol. 16. No. 6. 11 pp. With 1 plate.

i. The author gives a list of the proportional number of leucocytes given by many workers. Of these the most important are the figures of ROGERS (7,500 per cmm.) and MCCAY (9,000), since they refer to Bengalis. Dr. Banerji's standard is 7,698, with maximum 10,000 and minimum 5,600.

Differential counts of average healthy Bengalis show slight increase in large mononuclears and eosinophiles.

Poly.	*Large Mono.*	*Small Mono.*	*Eosino.*
67·22	9·67	18·42	4·69

Differential counts of cholera cases show marked increase of mononuclears and proportional decrease of lymphocytes, which is peculiar to cholera. The average being :—

Poly.	*Large Mono.*	*Small Mono.*	*Eosino.*
72·55	16·83	10·03	0·59

Cholera cases show marked leucocytosis not incompatible with recovery. The majority of cases give 10,000 to 30,000 with no relation to the concentration of the blood.

ii. The plate shows the five classes in Arneth's system (after GRÜNER) and is taken from the *British Jl. of Tuberculosis.* 1917. Vol. xi.

1. Normal Arneth pictures from healthy Bengalis show a definite shift to the left—average index 52·55.

2. In cholera there is a well-marked shift to the left, the average being 71·9.

3. The Arneth index is of use in determining the severity of the disease—average of fatal cases 81·30.

J. H. T. W.

ZABOLOTNY (D. K.). [**The Practice of Anti-Cholera Vaccination** *per os.*] —*Hygiene and Epidemiol.* Moscow. 1922. Aug. No. 1. p. 73. (Russian Text.)

Anti-cholera vaccination *per os* is regarded by the author as more efficient and practicable when immunization of large numbers is required. It was widely used during recent epidemics in Russia.

The author recommends the use of vaccines prepared from thick suspensions of organisms killed by heat, carbolic acid or alcohol (20–40 per cent.), from 3 to 5 doses of 2–100 cc. every other day. Each dose contains from 10 to 100 milliard vibrios, or from 0·01 to 0·1 gm. of dried organisms.

Vaccines were also prepared in the form of tablets with sugar or cocoa, each containing 0·01, 0·05 or 0·10 gm. dried organisms.

According to ZLATOGOROV and SAVCHENKO, in persons inoculated by mouth the agglutination titre rises to 1/400, and the bactericidal to 1/60. From experiments on themselves, they found that after immunization by mouth, the preventive properties of the serum increased considerably, and the inoculation of living cultures produced no pathogenic symptoms, only a short period of "carriage" of vibrios resulted.

Guinea-pigs could be protected from lethal doses by inoculating them with the serum of persons who had been immunized with killed agar suspension of vibrios. [It would be interesting to know how long the protection lasts.]

C. A. Hoare.

OYAMA (Ryo) & YANAGISAWA (Sanji). [**On the Preservation of the Efficacy of Cholera Sensitized Vaccine and Typhoid Vaccine.**]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1922. May. No. 320. [Summarized in *Japan Med. World.* Tokyo. 1922. Nov. 15. Vol. 2. No. 11. p. 321.]

The authors state that cholera sensitized vaccine preserved its full antigenic power for 13 months; after that time it becomes weaker. In experimental tests a two-year-old vaccine was found to protect inoculated animals against twice the ordinary lethal dose.

J. H. T. W.

i. CAPONE (G.). **Di uno stipite di colera a colonia atipica e spontaneamente agglutinabile.** [A Strain of *V. cholerae* with Atypical Colonies spontaneously Agglutinable.]—*Boll. d. Istituto Sieroterapico Milanese.* 1920. Apr. No. 5. pp. 297–300. [Received October 16, 1922.]

ii. ALALOU (M.). **Le vibrion cholérique de Tchilinguir.**—*Bull. Sanitaire de Constantinople.* 1922. Nov. 2 & 25. Nos. 1 & 2. pp. 1–4. With 1 plate.

iii. STUTZER (M. I.). **Biologie der choleraähnlichen Vibrionen, die während der Epidemie 1921 in Woronesch nachgewiesen wurden.**—*Rev. Microbiol. & Epidemiol.* Saratov. 1922. Vol. 1. No. 3. p. 286.

iv. KODAMA (H.) & TAKEDA (H.). **Eine neue biologische Reaktion der Choleravibrionen.**—*Cent. f. Bakt.* 1. Abt. Orig. 1922. Sept. 1. Vol. 88. No. 7–8. pp. 513–518.

i. The author suggests that this strain was the result of a mutation as understood by DE VRIES.

ii. This is one of the several atypical vibrios differing from type in agglutination, etc. It does not produce haemolysis.

iii. The vibrios described were a local strain which did not agglutinate with type anti-cholera serum but produced clinical cholera.

iv. This has already been noticed in this *Bulletin*, Vol. 19, p. 380. The German paper contains more details.

J. H. T. W.

BERTARELLI (E.) & MARCHELLI (M.). **Ricerche intorno alla durata di attività dei vaccini anticolerico e antitifico.**—*Boll. d. Istituto Sieroterapico Milanese.* 1919. Apr. Vol. 2. No. 3. pp. 157–167. [Received Oct. 16, 1922.]

DELAMARE (Gabriel). **Choléra et porteurs de vibrions dans la région de Constantinople de 1920 à 1922.**—*Bull. Acad. Méd.* 1922. July 25. 3rd Ser. Vol. 88. No. 30. pp. 98–100.

LAMPE (Petrus Hendricus Josef). **Vergelijking van vibrio cholerae en vibrio El-Tor.**—68 pp. 1922. Amsterdam : S. L. van Looy.

SASKI (Stanislaw). **Cholera azjatycka w wojsku na obszarze wojennym w roku 1920–1921. Le choléra asiatique dans l'Armée Polonaise dans la zône des Armées et des Etapes en 1920–1921.**—*Przegl. Epidemjol.* Warsaw. 1922. Vol. 2. No. 3. pp. 339–344. [French summary p. 345.]

YOMANOUCHI (Tatsuma). [**On the Diagnosis of** *V. cholerae.*]—*Nihon Biseibutsugakkwai Zasshi* (*Jl. of Japan Microbiol. Soc.*). 1922. May. Vol. 16. No. 5. [Summarized in *Japan Med. World.* Tokyo. 1922. Nov. 15. Vol 2. No. 11. p. 322.]

ENTERIC FEVERS IN THE TROPICS.

BERTHÉLEMY & LE BOURDELLÈS. **Quelques cas de fièvre typhoïde dans la race noire confirmés par l'hémoculture.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1922. Mar. Vol. 2. No. 1. pp. 67–70.

The authors state that the negro race is generally supposed to be immune to typhoid fever. They give an account of eight cases which occurred among the soldiers of the 136th Bataillon de Tirailleurs Sénégalais. Haemoculture was positive in six cases for *B. typhosus*, and in the other two *B. paratyphosus* A was isolated. Three of the six suffering from typhoid died; the rest recovered.

J. H. Tull Walsh.

BOUFFARD & GIRARD. **La fièvre typhoïde chez le malgache en Emyrne.**—*Bull. Soc. Path. Exot.* 1922. Oct. 11. Vol. 15. No. 8. pp. 675–678.

The authors recognize that typhoid fever has been known in Madagascar since its conquest, but they raise the ancient question as to whether natives suffer or whether true typhoid is generally confined to Europeans. That *B. typhosus* spread to the east with the conquests and settlement of Europeans is perhaps generally true, but the East and Western tropics always contained the paratyphoid germ [v. "The Practice of Medicine in the Tropics," Vol. 2, p. 955, *et. seq.* (HARVEY & WALSH).] In the cases cited by the authors the germ discovered was one or other of the paratyphoids.

J. H. T. W.

BACHMANN (Alois). **Sobre la presencia de bacilos Para B anómalos en Tucumán.**—*Rev. Inst. Bacteriolog.* 1922. Dec. Vol. 3. No. 2. pp. 3–15. (French summary pp. 15–16.)

During an outbreak of enteric fevers in the provinces of Cordoba and Tucuman *B. typhosus* was found in 80 per cent., para. A in 12 per cent., and para. B in 8 per cent. Many of these para. B were atypical, a condition frequently found.

J. H. T. W.

DUFFAU (H. E.). **Fièvre typhoïde et bactériothérapie.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1922. Mar. Vol. 2. No. 1. pp. 59–66. With 9 charts in text.

The main argument may be briefly stated. A military detachment was transferred from X to T. *En route* the men halted on the 8th December at N, a place notorious as a typhoid focus with contaminated water supply. On December 20 most of the men received 2 cc. of Vincent's T.A.B. vaccine. Two or three days later, after arrival at T, a small outbreak of typhoid fever occurred in the detachment. The non-vaccinated and some who had been partly inoculated later

than December 20 were attacked. The author claims that the vaccination which had been carried out on the 20th as a prophylactic acted as a curative agent [? a doubtful claim]. Nine men suffered. Of these five were vaccinated during the incubation period. The other four were not protected. The cases are described in detail with temperature charts, and it is evident that the disease was milder in the five protected men than in the other four cases.

J. H. T. W.

HORNUS (Pierre). **Note sur la vaccination antityphoïdique des indigènes marocains.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1922. June. Vol. 2. No. 2. pp. 248–252.

Anti-typhoid vaccination has been compulsory in the French Army since 1913; but in Morocco it has hitherto been confined to European troops. Serious cases made it necessary to protect indigenous troops. Results :—

	Ether vaccine.	*Heated vaccine.*	*Lipo vaccine.*
Total vaccinated	71	71	70
Reaction local only	12	15	27
Reaction general (1st day) ..	25	21	7
,, ,, (2nd day) ..	15	12	8
Excused duty (3rd day) ..	10	8	7
To hospital	1	0	1

[These figures favour the lipo vaccine.]

J. H. T. W.

SHERA (A. G.). **The Present Value of the Widal Reaction in the Inoculated Subject.**—*Brit. Med. Jl.* 1922. Dec. 2. pp. 1076–1077.

Case 1. An ex-soldier inoculated during the war, the last time most likely in 1917. The technique used for the Widal reaction was Dreyer's macroscopic method with Oxford standard cultures. In Case 1 the symptoms were not typical of enteric fever :—

CASE I.

	Serum Dilutions.			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
Typhoid cultures ..	+	+	+	+
Paratyphoid A	Trace.	—	—	—
Paratyphoid B	—	—	—	—

Strongly positive for typhoid; but at the autopsy miliary tubercle was found to be the cause of death. It was suggested by Dr. WILLOUGHBY that the positive Widal might have been due to residual effects of wartime inoculation.

	Serum Dilutions.			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
CASE II.				
Typhoid cultures ..	+	+	+	+
Paratyphoid A	—	—	—	—
Paratyphoid B	—	—	—	—
CASE III.				
Typhoid cultures ..	+	+	+	Trace.
Paratyphoid A	+	Trace.	—	—
Paratyphoid B	—	—	—	—
CASE IV.				
Typhoid cultures ..	+	+	+	Trace.
Paratyphoid A	—	—	—	—
Paratyphoid B	Trace.	—	—	—
CASE V.				
Typhoid cultures ..	+	+	—	—
Paratyphoid A	—	—	—	—
Paratyphoid B	—	—	—	—
CASE VI.				
Typhoid cultures ..	+	+	—	—
Paratyphoid A	—	—	—	—
Paratyphoid B	—	—	—	—

The examinations in Cases 2 to 6 were made on five healthy ex-soldiers. The positive predominance in typhoid reaction no doubt lies in the greater strength of the typhoid vaccine and possibly also because this was used alone at first during the war.

In Case 1, the agglutination tests were undertaken "without prejudice" to help Dr. WILLOUGHBY in the diagnosis of the disease. Finding strong signs of immunity reaction with no signs of enterica infection the author proceeded to examine Cases 2 to 6 (all healthy men). [It is somewhat strange to find an acquired antibody so strong after many years. It would be of interest to know the exact date of the last inoculation in each of these cases.]

J. H. T. W.

KRAUS (R.). **Sobre a proteinotherapia da febre typhoïde.** [Protein Therapy in Typhoid Fever.]—*Brazil-Medico.* 1922. July 1. Year 36. Vol. 2. No. 26. pp. 1–4.

UNDULANT FEVER.

BASSETT-SMITH (P. W.). **Mediterranean or Undulant Fever.**—*Brit. Med. Jl.* 1922. Nov. 11. pp. 902–905.

In this lecture Bassett-Smith gives an authoritative survey of the subject. When dealing with the present endemic areas he points out that an educational campaign among the people of Malta has produced very meagre results, and he is of opinion that the destruction of all infected animals is the only prophylactic measure applicable to areas where natives have to be dealt with. At Greenwich he found that quite a large percentage of cows' milk samples gave a positive agglutination reaction with *M. melitensis* and attributes this to infection of the cattle with *B. abortus*. The author's four cases of para-melitensis infection are described; three came from the south of France. One, a debilitated old lady, gave an intense local and general reaction to each dose of vaccine, and an intense purpura followed, with evidence of nephritis. The vaccine proved to be sterile, and when inoculated into guinea-pigs caused no ill effects, so that the reaction seems to have been due to a lowered resistance to the small amount of antigen introduced. A case of melitensis infection is also recorded in which a purpuric rash occurred with each wave of fever. Under diagnosis attention is drawn to the fact that the infecting micro-organism can generally be recovered from joints affected by arthritis, but whether this is recommended as a routine procedure is not definitely stated.

With regard to treatment the ideal is stated to be a combination of an antitoxic serum and an autogenous vaccine, together with the administration of yeast or some similar preparation to increase the phagocytic activity of the blood.

W. Byam.

MARAIS (David P.). **Undulant (Malta) Fever in South Africa: an Appeal for its Study and for the Recognition of its Chronic Forms.**—*S. African Med. Rec.* 1922. Dec. 9. Vol. 20. No. 23. pp. 459–464.

The chief contention of the author is that the clinical and etiological factors of undulant fever [which he persists in calling Malta fever] in South Africa are insufficiently known. He describes the symptoms of some of the more chronic forms which may be practically apyrexial, but are very persistent and debilitating and are very difficult to diagnose. He recommends that besides the use of vaccines, which should be prepared from South African strains, arsenic should be given, preferably intravenously, the vaccine and intravenous injections alternately in short courses, and he states that "intramine" was used in a small number of cases with encouraging results. Dr. P. du TOIT reports from the Veterinary Research Laboratory that the South African strains of *M. melitensis* correspond with those of the Mediterranean and are reliable, and that they are closely related to *B. abortus*, though differing in the effect on guinea-pigs*; the elucidation of this question is receiving special study at the laboratory. All classes of goats and many other animals are susceptible, and though goats' milk is the most common source of infection, urine and possibly meat may spread the disease, but not the dried hides of animals.

P. W. Bassett-Smith.

* This differs from the findings of Burnet.

Gow (Archibald). **The Incidence of Undulant Fever in South Africa. Is it a Menace to Urban Communities?**—*S. African Med. Rec.* 1922. Dec. 23. Vol. 20. No. 24. pp. 475–479.

In this interesting paper the author shows that in South Africa the indigenous Boer goat was free from infection of the *M. melitensis*. From time to time, between 1838 and 1880, shipments of the Angora breed were imported and these brought infection with them. They were interbred with the Boer goats, chiefly for producing mohair, the export of which rose from 870 lb. in 1857 to 23,479,276 lb. in 1912. In 1896 Swiss goats, free from infection, were introduced for their superlative milking properties. A survey by STRACHAN of the incidence of undulant fever in South Africa showed that endemic centres of the disease were widely spread, and were always due to infected goats. The author shows that in rural districts the incidence of the disease is now more or less stationary, and much legislation is not advisable, but in urban areas the increase of cases requires recognition, for the number of towns returning cases is increasing, for instance Carnarvon, Beaufort West, Graaff-Reinet, and Premier mine. It is stated that there is an increased tendency for families to keep a goat or goats for their own milk supply, and that these are often living under most insanitary conditions and are frequently infected, causing one or more cases in the family. Should, however, the milk be used for sale, wider distribution of the disease would occur. Infection of Swiss goats has been proved to exist and has given rise to cases. Therefore, legislation for urban districts is urgently required, or the Swiss goat industry will suffer. By-laws are required regulating what is meant by milk, viz., that goats' milk must not be mixed with cows' milk. Goats' meat must not be sold as mutton. All goats introduced into towns should be tested and proved to be free from infection and steps should be taken to prevent the introduction of infected goats to herds, more particularly of the Swiss variety. It is also necessary that goats kept for domestic purposes in towns be under certain reasonable regulations with regard to sanitation.

[The infection by meat is not of very great importance as the danger is slight, but the case recently reported in France of infection derived from handling the hides of infected animals should be borne in mind.]

P. W. B-S.

ARCHIBALD (R. G.). **An Unusual and Fatal Case of Undulant Fever contracted in Khartoum.**—*Jl. Trop. Med. & Hyg.* 1923. Feb. 15. Vol. 26. No. 4. pp. 55–57. With 1 chart.

The author reports a case of malignant undulant fever contracted by an Egyptian soldier, aged 25, at Khartoum, which place he had not left for twelve months. The fever was at first of an irregular character and as the spleen was enlarged he was treated with intramuscular injections of quinine, without benefit. The temperature finally ran high, 105° in the second wave of pyrexia, and he died on the 27th day. The blood tested on the 21st day gave no serum reaction for the typhoid group or for undulant fever, but the *M. melitensis* was isolated from the blood by culture on that day and from the spleen at the post mortem. The organism in young cultures was a minute gram-negative coccus, but in older ones was very pleomorphic. The spleen weighed 23½ oz. and showed a decided increase in the lymphoid elements.

Clinically there were but few symptoms beyond frontal headache and irregular fever until three days before death, when nervous symptoms became apparent. The other interesting points were, the absence of agglutinins on the 21st day with the organism in the blood (bad prognosis), and the early confusion of the case with, and treatment for, malaria.

It is probable that undulant fever is fairly widely distributed in the Sudan. It has been recognized by the Blue Nile at Kassala, Berber, Nuba mountains, Bahr el Ghazal, and by the Red Sea, probably brought by pilgrims from Arabia. Bovine abortion does not occur in the Sudan, and goats are undoubtedly the cause of the infection, but the percentage affected is not known ; luckily the milk is usually boiled by the natives before use. The author emphasizes the importance of proving that the urine is free from the organism, which he terms *Brucella melitensis*, before the case is discharged from hospital.

P. W. B-S.

AURICCHIO (Luigi). **Sull' infezione associata tifo-melitense.** [Associated Enteric and Undulant Fevers.]—*Pediatria.* 1922. Dec. 15. Vol. 30. No. 24. pp. 1155–1163. With 2 charts in text.

A series of cases in or near Naples in which enteric fever (in four due to *B. typhosus*, and in one *B. paratyphosus* B) was associated with undulant fever. Clinically the course resembled that of severe typhoid rather than that of undulant fever. In four cases the *Micrococcus melitensis* was isolated from the blood or urine, the enteric element being diagnosed by the Widal reaction only (apart from the clinical aspect) except in the paratyphosus case when the bacillus was obtained from the blood. A point worthy of special note is the fact that the temperature became normal for a period varying from two to six days, usually after the third injection of typhosus vaccine. [It appears strange that this should have occurred in every case and that melitensis vaccines should have a similar effect in the later stages, and still more strange that the most marked effect of the " typhoid vaccine " was obtained in the paratyphosus B patient.]

H. Harold Scott.

DARGEIN & PLAZY. **Relation d'une épidémie de mélitococcie.**—*Bull. et Mém. Soc. Méd. Hopit. de Paris.* 1922. Oct. 26. 3rd Ser. Year 38. No. 28. pp. 1373–1377.

The authors have previously drawn attention to the presence of undulant fever at Toulon ; they now report a small epidemic at the air station of Aubagne (near Marseilles). This affected 7 out of 14 sub-officers who lived together, and the cases were fairly severe, each lasting from three to five months. Goats' milk or its products could not be incriminated, but the infection was traced to a dog which lived and ate with the sub-officers. This animal, though apparently quite healthy, had shortly before given birth to puppies, two out of three of which were born dead. The blood of the mother had a high agglutination titre for *M. melitensis*, and after the animal was killed the epidemic ceased. [It is not stated how the dog infected the men.] A second interesting point mentioned is that the medical officer and the laboratory assistant who carried out the various technical examinations both contracted the infection, with incubation periods of 17 and 21 days, a further demonstration of the dangerous character of

the organism. The third point made was that the usual doses of vaccine (50 to 200 million) were ineffective; better results were obtained with a heated and sensitized vaccine in doses of 500 million to 3,000 million, but the treatment should be commenced as early as possible. [These large doses were apparently given only in one case; they did not produce any definite general or local reaction, but the duration of the disease seemed to be shortened.]

P. W. B-S.

LAKE (G. C.). **Malta Fever in South Western United States, with Special Reference to a Recent Outbreak in Phoenix, Ariz.**—*Public Health Rep.* 1922. Nov. 24. Vol. 37. No. 47. pp. 2895–2899.

Undulant fever has been known to exist in Texas for at least 36 years, and in Arizona for 14. An epidemic of the disease occurred at Phoenix, Ariz., in 1922; there were not less than 32 cases and it was definitely traced to infected goats' milk, 18 per cent. of the herd giving positive agglutination reactions. As goats' milk is sold in a large number of cities in the U.S. and the climatic conditions in the South-west States are favourable, an increase in the incidence of the disease is most likely. It will be advantageous, therefore, from a public health point of view, to prohibit the use of unsterilized goats' milk in the cities.

[It is a pity that our friends in the United States and in South Africa will persist in using the term "Malta Fever" for this disease, which, as they show, is endemic in their own countries.]

P. W. B-S.

REBAGLIATI (Raul). **Apuntes sobre le Fiebre de Malta en Lima. (Epidemiología — Formas clínicas — Diagnóstico — Tratamiento).** [Undulant Fever in Lima.]—*An. Facul. de Med.* Lima. 1922. May–June. Vol. 5. No. 1. pp. 94–104.

Undulant fever is by no means infrequent in the Province of Tumbes, Peru, and differs in several points from the typical descriptions of the condition. In only one instance out of 40 was there a definite history of the use of goats' milk and that was the case of a medical man whose attack began 15 days after eating cheese made from the milk. The infection, in the author's belief, is in most cases transmitted by the agency of flies. The onset is usually insidious, resembling that of enteric fever, though at times it is sudden, with a chill. In one instance there was intense intercostal neuralgia a week prior to any rise of temperature and this persisted throughout the illness. In yet another case a unilateral orchitis ushered in the disease and for a time dominated the scene. This has been noted as a complication but not as an initial symptom. Sweats are not common, whereas nausea and even vomiting are often marked features.

As regards treatment the author puts great reliance on anti-serum and on autogenous vaccines, and the cases recorded here bear testimony to their usefulness. He finds that those patients who do not show a systemic reaction to the serum do not appear to derive any benefit from its administration. Unfortunately, in the cases reported, the doses neither of the serum nor of the vaccines are stated.

H. Harold Scott.

GIRBAL. **Fièvre de Malta guérie par l'autohémothérapie.**—*Jl. des Practiciens.* 1923. Jan. 6. Vol. 37. No. 1. pp. 7–8. With 1 chart.

A case of moderately severe undulant fever was treated with success by autohaemotherapy. From a vein of the arm 5 cc. of blood was drawn, citrated, and then injected subcutaneously; this was repeated three times at intervals of three to four days. The advantages stated are :—(1) the method is always available; (2) its action is always specific; (3) it does not produce any severe reaction. The specific reaction would be obtained whether the infection was due to melitensis or paramelitensis organisms.

P. W. B-S.

ASHE (E. Oliver). **Treatment of Malta Fever.** [Correspondence.]—*Brit. Med. Jl.* 1923. Jan. 6. p. 43.

Arsenical preparations have been found useful by the author in the treatment of undulant fever in South Africa, and he quotes a case of several years' duration which was cured by one injection of galyl. [Arsenical injections undoubtedly act as tonics but have not been generally found to be curative for septicaemic diseases. Undulant fever is a disease of such irregular duration and character that the cases have to be followed up for some time before a cure can be pronounced.]

P. W. B-S.

ROZIES (H.). **Fièvre de Malte et abcès de fixation.**—*Progrès Med.* 1922. Dec. 23. No. 52. pp. 671–672.

The author describes a severe case of undulant fever which had failed to improve after treatment by four injections of increasing doses of melitensis vaccine, given at *short* intervals (3 to 4 days), but after a subcutaneous injection of 2 cc. of essence of turpentine rapidly improved when the abscess was evacuated. He emphasizes the importance of the turpentine being old, being given in sufficient dose, 2 cc. not 1 cc., and as early as possible. It should, however, only be used in severe cases, as the one mentioned. In this there was high temperature, persistant vomiting, delirium, and resistance to vaccine treatment. The cure is said to have been effected by the fixation abscess on the 40th day. [There is often a negative phase in this disease and this should be remembered when giving vaccines.]

P. W. B-S.

VINCENT (H.). **La prophylaxie de la fièvre ondulante (Fièvre de Malte ou méditerranéenne).**—*Bull. Acad. Méd.* 1922. June 30. 3rd Ser. Vol. 87. No. 25. pp. 672–678.

The author draws attention to the number and wide distribution of cases of undulant fever reported in France and quotes four cases he has himself seen in Paris, in one of which the patient took five litres of goats' milk a day; the case was complicated with nephritis and endocarditis and ended fatally. It is therefore important to use methods of prevention. He again describes his method, commenced in 1910, of immunizing goats by vaccination, by which he states that the animals become so highly immunized that the injection of large doses of living cultures intravenously or intraperitoneally does not produce

any symptoms, and that in contradistinction to the views of ZAMMIT, who believes that once infected the animal never recovers, whether young or old, the organism can never be recovered from their organs on post mortem examination. By this protection of the goats and other animals the incidence in man also must be lowered. He states that besides the use of the protective vaccination it is necessary to educate the owners and keepers of the animals and to appeal to their feelings by showing that the method has financial advantages. It must be also recognized that the urban as well as the rural goats are affected. A strong recommendation from the Academy of Medicine, Paris, was sent to the Ministry of Hygiene to enforce sanitary measures for goats and other animals infected with the *M. melitensis* and to destroy all infected animals.

In the discussion M. BARRIER agreed with Vincent that it was not advisable to make the disease notifiable on the rural code, as it is endemic and not epidemic, but that the Ministries both of Hygiene and Agriculture should push the use of protective vaccination. M. MARTEL thought that the measures would be ineffective unless notification was made compulsory.

P. W. B-S.

BURNET (Et.). **Sur les rapports du** *B. abortus* (**Bang**) **et du** *Micrococcus melitensis.*—*C.R. Acad. Sci.* 1922. Oct. 30. Vol. 175. No. 18. pp. 790–793.

The author has already reported on much of his experimental work. carried out at the Pasteur Institute, Tunis, on melitensis infections [see this *Bulletin*, Vol. 19, p. 742.] He now gives in a little more detail his comparative studies of the type cultures of *M. melitensis* and of two of *B. abortus* received from the Lister Institute, London. By morphology and culture characters he was not able to separate these. With guinea-pigs abortus was the more pathogenic, whereas with monkeys it was less so, and he states that with neither organism was there any decrease in healthy guinea-pig births. The strains of one organism differed as much in virulence as did abortus from melitensis. Immunity reactions were unsatisfactory, and with the intradermic test four cases of undulant fever all reacted, but most markedly to abortus. He considers these reactions more analogous to those of human and bovine tuberculosis than to those of human and avian.

Guinea-pigs infected with melitensis and heavily inoculated intraperitoneally with abortus died, and *vice versa*. Though bacteriologically not distinguishable the great difference in the two organisms is seen in the varying pathogenic action on guinea-pigs and monkeys [also man.] It is the most striking example we possess of the adaption of microbes to specific animals.

P. W. B-S.

DENGUE AND PAPPATACI FEVERS.

OLIVIER (P. H.). **Dengue.**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.*—1921. Vol. 2. pp. 345–355.

This is a critical and historical survey of the literature on dengue fever, which the author defines as "an acute exanthematic infectious disease of short duration, appearing in all tropical and subtropical countries in endemic as well as epidemic forms, and characterized by peculiar rheumatic pains throughout the whole body, a rather typical temperature chart, moderate leucopenia, a relatively slow pulse, an initial and terminal exanthema, and a very favourable prognosis with often serious subjective and objective phenomena." It has a seasonal character and appears in the hot months of the year. The epidemics mostly begin in coast towns and spread along the main roads of traffic inland. The various forms found in India known as 3, 5 and 7 day fevers are probably the same disease modified by circumstances as yet unknown and should all be classed as dengue-like fevers, but the reasons for differentiating phlebotomus fever are fairly strong. It will only be possible to classify them when the virus of each has been discovered, for they cannot be separated by their clinical symptoms. Cross experiments with insect vectors may help the solution of the problem.

P. W. Bassett-Smith.

SCOTT (L. C.). **Dengue Fever in Louisiana.**—*Jl. Amer. Med. Assoc.* 1923. Feb. 10. Vol. 80. No. 6. pp. 387–393.

A widespread epidemic of a dengue-like fever occurred in Louisiana during the latter part of 1922. The present paper is an abstract of the results of a *questionnaire* sent out to 2,000 medical officers; there were only 442 replies, and of these 333 were useful. The general conclusions were that the symptoms agreed very closely with those found in standard works for dengue. They did not favour the view that the epidemic was a mild form of yellow fever; only 6·3 of the observers were in favour of this, though gastro-intestinal symptoms with haematemesis were frequent, jaundice was occasionally found, and, rarely, black vomit (possibly bile). There was little doubt that *Stegomyia fasciata* (which the author, in places, calls *Aëdes aegypti*) were commonly the carriers, and that at the onset of the cold weather the cases decreased with the non-breeding of the mosquito. It is calculated that over 30,000 contracted the disease; the incidence was largely dependent on the density of the population.

P. W. B-S.

EUGLING (Max). **Ueber das Denguefieber.**—*Wien. Klin. Woch.* 1922. Dec. 21. Vol. 35. No. 51. pp. 991–993. With 1 chart in text.

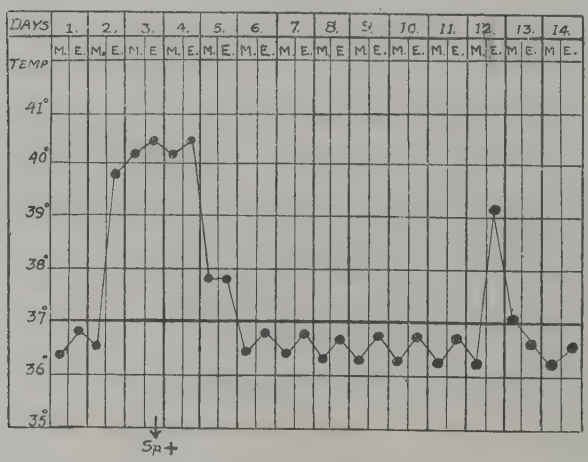
The author reports that in the summer of 1921 a number of Macedonian people came to Vienna and brought with them dengue fever, which at the time was diagnosed and treated as malaria. Such cases were rare there before the Balkan war. In his description of the clinical characters there is nothing new which would be helpful in diagnosis; this had to be made chiefly from malaria and phlebotomus fever.

P. W. B-S.

COUVY (L.). **Note sur deux épidémies de dengue à Beyrouth (1920–1921).**—*Ann. Inst. Pasteur.* 1922. Dec. Vol. 36. No. 12. pp. 851–858. With 4 charts in text.

The author has previously reported finding spirochaetes in the blood of cases of a dengue-like fever during an epidemic at Beyrouth in 1920 [see this *Bulletin*, Vol. 19, p. 66]. There was a similar epidemic in 1921, and he again found the spirochaetes not only before the onset of the fever but during 3 to 48 hours after; they were very scanty. The inoculation of the blood into rabbits gave rise to a fever; spirochaetes were found in the blood of these animals at the time of the onset or relapse; if killed three days after the relapse, no spirochaetes could be demonstrated in the blood, liver, or spleen. The disease can therefore be transmitted from man to rabbits, and three passages were made in these animals without attenuation of the virus. During the epidemic, culex, stegomyia and phlebotomus were abundant, but in Lebanon during an intense epidemic only phlebotomus were found. Experiments to inoculate phlebotomus fed on suitable cases to rabbits gave negative results (two animals each with 10 flies). Injection intraperitoneally of crushed infected flies gave rise to febrile attacks and the spirochaetes were recovered (two animals again used). These facts indicate that the phlebotomus is the "carrier." The point of importance is whether the cases were true dengue or phlebotomus fever? The author, from the clinical symptoms, considers the former to be the right diagnosis, but he gives as a typical chart one of a three-day fever, with a short relapse on the twelfth day, which might very

Temperature Chart of Patient with Three-Day Fever of average severity. [COUVY.]



[Reproduced from the *Annales de l'Institut Pasteur.*]

well illustrate phlebotomus fever. He states that a mild relapse often took place about the twelfth week, but immunity for a year was usual.

P. W. B-S.

BRUHAT. **La fièvre à phlébotomes au centre marine de Beyrouth.**—*Arch. Méd. et Pharm. Nav.* 1922. Sept.–Oct. Vol. 112. No. 5. pp. 412–413.

At the marine depot at Beyrouth in 1921 there were 293 cases of phlebotomus fever, giving a total of 1,054 days sickness. The epidemic lasted from May to October, but was most severe in June. The incubation period appeared to be very short, as some of the men were attacked two hours after landing; relapses were very rare. Those on shore suffered most, those in ships moored alongside the quay were occasionally affected, those in ships anchored in the stream, never. The symptoms are said to have been typical, the fever terminating in three days, and being followed by a condition of asthenia for ten days.

P. W. B-S.

KANDELAKI (Simon). **La fièvre pappataci et Phlebotomus en Georgie et dans les pays voisins.**—46 pp. With 3 plates and 6 text figs. [In Georgian. French summary pp. 45–46.] 1920. Tiflis: Imprimérie d'État.

Describes an epidemic of Phlebotomus fever, which is known in the local vernacular as *Hava*, in the coastal valleys of Trebizond, in June–September, 1917, *P. papatasii* being the infective agent. In Georgia also, where *P. perniciosus* and perhaps other species are found, this fever has been observed.

A. A.

WHITTINGHAM (H. E.). **Observations on Sand-Fly Fever in Malta.**—*Proc. Roy. Soc. Med.* (War Section). 1922. Nov. Vol. 16. No. 1. pp. 1–14. With 2 charts in text.

The author from his studies in Malta during 1921 came to the following provisional conclusions: (1) that the type of fever was usually of the three-day variety, in 20 per cent. it recurred on the 9th to the 12th day, and in 12 per cent. again between the 3rd and 6th week; (2) there was an initial slight leucocytosis followed in a few hours by a leucopenia, which lasted three or four days, with again a transient leucocytosis about the 10th day; (3) a leptospira, resembling *L. icterohaemorrhagiae*, was isolated on the first day of the fever by direct culture from the blood of six clinically sand-fly fever cases, but when inoculated into non-immunes failed to reproduce the disease, possibly because an intermediate stage in the phlebotomus fly is necessary. This leptospira was not pathogenic to guinea-pigs. The question is asked, were these really true cases of sand-fly fever? It is just possible that the spirochaete found was a modified form of *L. icterohaemorrhagiae*—modified by passage and perhaps atmospheric conditions. [This is unlikely, as not one of the guinea-pigs inoculated with the isolated leptospira developed jaundice or any symptoms of epidemic jaundice.]

P. W. B-S.

JAPANESE RIVER FEVER.

HATORI (Juro). **Tsutsugamushi-Disease in Formosa.**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 2. p. 187.

The exanthematous fever endemic in Formosa is analogous to tsutsugamushi disease of Japan, clinically and etiologically. It is transmitted by the larva of *Trombicula akamushi* which infests rats, mice, chickens, pheasants and scratching birds in infested fields. In Formosa mite infestation is commonly limited to fields on river banks, foothills of mountains, and thick forest land, irrespective of inundation. Seasonal prevalence is from April to October and the mortality 8 to 10 per cent. The problem is how to exterminate the mites. Protection of labourers from the bites is not easy.

P. W. Bassett-Smith.

NAGAYO (Mataro) & TAMIYA. **Untersuchungen ueber das Japanische Flussfieber (Tsutsugamushi Krankheit).**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 2. pp. 188–195.

The authors give a very full description of what was known in 1921 of tsutsugamushi disease, which can mostly now be found in textbooks.

P. W. B-S.

ROCKY MOUNTAIN SPOTTED FEVER.

NICHOLSON (F. M.). **A Cytological Study of the Nature of *Rickettsia* in Rocky Mountain Spotted Fever.**—*Jl. Experim. Med.* 1923. Feb. 1. Vol. 37. No. 2. pp. 221–230. With 3 plates.

Some doubts have been expressed as to the nature of the Rickettsia-like bodies described by WOLBACH as causative agents of Rocky Mountain Fever [see this *Bulletin*, Vol. 16, p. 420], and suggestions have been made that they may be mitochondria. The similarity of mitochondria to bacteria led WALLIN to express his belief that they are really bacteria which have developed a high degree of symbiosis. The author has made a careful study of the organism and abnormal cell contents both in the pathological tissues of infected guinea-pigs and in specimens of *Dermacentor venustus* received from NOGUCHI, using efficient controls. The staining for the mitochondria was aniline fuchsin and methyl green, for phagocytosed haemoglobin iron haemotoxylin, and Kye's method for gram-positive bacteria.

"The *Rickettsia* of Rocky Mountain spotted fever were easily differentiated from mitochondria, phagocytosed blood pigment, nuclear debris, and all other known cellular constituents. Although they were lodged within the cytoplasm of endothelial cells, they were not observed to establish any definite relations with the nucleus or with other cellular components. Their number varied in contiguous cells which sustained the same degree of injury as evidenced by nuclear changes, and alterations in their mitochondria content. The mitochondria, on the other hand, showed similar modifications, characterized by a decrease in number and a rounding up into spherules, in all the endothelial cells seen in a section of an affected blood vessel. Diplobacillary forms were most abundant in the early stages of the reaction and single bacillary bodies towards its termination. Other slight differences in morphology from Wolbach's account were noted in the organisms as seen in the tissues of both ticks and guinea-pigs. His study of the distribution of specific lesions with accompanying organisms in the tissues of guinea-pigs was confirmed and extended."

P. W. Bassett-Smith.

UNCLASSED FEVERS OF THE TROPICS.

SCHUEFFNER (W.). **Nicht klassifizierte Fieber im fernen Osten.** [Unclassified Fevers of the Far East.]—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 2. pp. 334–344. With 7 charts.

The author gives an analysis of various unclassed fevers, including dengue, phlebotomus fever, kedani fever, Weil's disease, simple continued and low fevers. Among the first he includes seven-day fever, the short fever of Java described by van de SCHEER, and six-day fever of Japan, in which a spirochaete has been described. Included under kedani are the tsutsugamushi fever of Japan and Formosa, and pseudo-typhus of Sumatra. His early work on the latter, with its curious local distribution, low mortality, remittent character, slight leucopenia, and the difficulty of infecting monkeys is specially referred to; the vector being the larval form of a Hyalomma [this *Bulletin*, Vol. 5, pp. 360–361].

In Weil's group are included the spirochaetal fevers found in Japan, Europe, and America, and possibly trench fever.

[A great deal of work has been carried out on these diseases since this paper was read, especially by WHITTINGHAM, with regard to the evidences of spirochaetes being the etiological cause of phlebotomus fever.]

P. W. B-S.

CRAGG (F. W.). **Remarks on the Typhus Fever of Kumaon, and on the Suggestion that it is transmitted by a Tick.**—*Indian Med. Gaz.* 1922. Aug. Vol. 57. No. 8. pp. 291–292.

Contrary to MCKECHNIE and MEGAW [this *Bulletin*, Vol. 19, p. 67] the author suggests that the peculiar fever found at Bhim Tal and Sat Tal is simply a form of louse-borne typhus. In support of this, he states that probably typhus is endemic in the Kumaon hills, that Bhim Tal is the last halting place on the road from Almora to Kathgodam, that there is a constant to-and-fro movement of the people between the hills and the plains, that louse infection is common among the coolies who work on the roads, and that European travellers, especially women and those carried in dhandies, are very subject to risk of infection by these coolies. The epidemiological evidences of the disease being louse-borne typhus rather than a tick-carried infection are therefore strong.

P. W. B-S.

DE LANGEN (C. D.) & VAN LOON (F. H.). **De overheerschende verschijnselen van het Zenuwstelsel bij de zgn. v.d. Scheer'sche koorts (astheno-neuralgische koorts).** [The Predominating Symptoms of the Nervous System in the so-called van der Scheer's Fever (Astheno-Neuralgic Fever).]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1922. Vol. 62. No. 4. pp. 474–489.

Van der SCHEER's fever is one of the dengue-like fevers of tropical countries which is prevalent at Batavia. The authors pass in review the symptoms of the disease (pains, swellings, rash, asthenia, psychic symptoms, etc.) which in their opinion may all be explained by neurogenic influences. They give the best proof of this thesis by showing that the sensibility of the peripheral nerves for galvanic currents is noticeably diminished after an attack of the fever (nerve blocking). They propose the name astheno-neuralgic fever.

W. L. Brown

BERIBERI.

SULDEY (E. W.). **Une épidémie de béribéri au Gabon. Considérations cliniques, thérapeutiques et prophylactiques.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1922. May–June–July–Aug. Vol. 20. No. 2. pp. 176–185.

This is an amplification of the author's paper on a small epidemic of beriberi in the Gaboon estuary [this *Bulletin*, Vol. 19, p. 758]. He describes more fully the clinical signs and symptoms of the disease, the prophylaxis and treatment. The wet type was found in 73 per cent. of the cases, and many of them were very severe ; he particularly mentions oedema of the neck region, a condition not generally noticed in textbook descriptions. For treatment 100–150 gm. of fresh palm oil given daily was very effective in mild cases, and even in severe ones was most useful when combined with dietetic measures, such as the use of red rice and fresh mealies. He found 1/10 mgm. of digitalin most useful with intestinal antiseptics followed by arsenical preparations, including 0·5–1 gm. of atoxyl injected subcutaneously ! As he believes the disease to be infective he isolates the patients and disinfects the faeces. For prophylaxis good hygiene is essential with fresh food rich in animal or vegetable oxydases.

P. W. Bassett-Smith.

FRAGA (Clementino). **O problema etiologico do beriberi.** [The Etiology of Beriberi.]—*Brazil Medico.* 1922. Dec. 23. Year 36. Vol. 2. No. 51. pp. 395–400.

After a historical retrospect the author gives his own observations on beriberi in Brazil. Diet undoubtedly plays a part, but the condition, in his opinion, is an infective one. He bases this on epidemiological, clinical, and therapeutic grounds. In support of the first he cites the fact that the disease spreads epidemically along the north littoral of Brazil, and mentions an outbreak at the Asylo S. João de Deus, in Bahia, which attacked some of the pavilions and spared others. In regard to the second, the following case is recorded : the patient was attacked suddenly with fever, headache, vomiting and diarrhoea ; on the next day these symptoms persisted and dyspnoea was superadded ; on the third day this last symptom was worse, there was tachycardia and a definite girdle sensation ; on the fourth there was oedema of the legs with paraesthesia and loss of knee-jerks, the temperature became normal, the dyspnoea diminished and the vomiting and diarrhoea ceased ; on the fifth day of the disease " there was definite, complete beriberic polyneuritis." Therapeutically, he states that salvarsan brings about a rapid cure. [For some years past there has been a doubt as to whether these acute attacks, known under the name of " Galloping Beriberi," are true beriberi or a malarial polyneuritis occurring in quartan malaria. It is to be regretted that no blood examination appears to have been carried out in the case of the patient recorded above.]

H. Harold Scott.

SCHNEIDER (Otto). **Postoperative Beriberi. Polyneuritis degenerativa, tropica et subtropica, endemica et epidemica, acute et chronica, latens et recidivans, causa ignota—Beriberi.**—*Ztschr. f. Chirurg.* 1922. Sept. 16. Vol. 49. No. 37. pp. 1357–1361.

After discussing the various theories of the causation of beriberi, the author points out that many conditions which have not been fully studied may come into play (as predisposing causes), such as cold and chloroform narcosis. He quotes three fatal cases after operation, with masked beriberi symptoms, and states that other cases which recovered had a history of latent beriberi. In every case the operation took place during the cold months and chloroform was used, from which he concludes that major operations on patients with signs or history of latent beriberi should not be carried out under chloroform at this time of the year, the resistance of the natives being then at its lowest. If the operation is necessary a local anaesthetic should be used. All cases following operations were of the "vagus type," and are thus particularly susceptible to chloroform narcosis; since the author has taken the above precautions he has not had any further cases of post-operative beriberi.

P. W. B-S.

MAGNENOT (Charles). **Sur une forme curieuse de Béribéri.**—*Jl. des Practiciens.* 1922. Dec. 9. Vol. 36. No. 49. pp. 806–808.

The author describes in detail a very interesting case of beriberi in which the symptoms were at first obscure. When the patient came under observation there was slight fever, gastric symptoms, and increased reflexes; under treatment the gastric symptoms passed off but nerve signs like those of tabes set in, pains, anaesthesia, ataxia, loss of reflexes, and increasing asthenia. A positive Wassermann suggested specific treatment, but no improvement followed, and beriberi was considered probable, and the more so because a number of other Senegalese of the same troop went down with ordinary beriberi. In spite of dietetic treatment, which cured the latter, the patient developed marked anasarca and died.

On investigation of the diet it was found that though of sufficient caloric value, it was of an unvaried character—polished rice, cooked meat, sugar, coffee, salts, and oil; it showed a deficiency of vitamin B.

P. W. B-S.

DEL ROSARIO (S. V.) & LOPEZ RIZAL (L.). **The Prophylaxis and Cure of Infantile Beriberi by Administration of Tiki-tiki Extract.**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 1. pp. 211–223. With 2 charts.

Infantile beriberi increased in the Philippines three years after the pandemic of influenza. Children under four months were generally affected, rarely after six months, and only those which were breast-fed; 38 per cent. under one year suffered. The highest incidence was during the months of September–December. The mortality from 1910 to 1915 was 79 to 128 per mille, but since the use of the extract it has fallen to 88 and later 35. The incidence of beriberi developing in mothers treated in the hospital was 15 out of 94. The extract can be used both for prophylaxis and cure, but different

brands give very unequal results. It should be administered directly to the baby, which need not be weaned.

The therapeutic value is stated thus: only 4–5 per cent. died, and 60–75 per cent. were cured or improved. The prophylactic value is higher: infantile beriberi was prevented in 81·6 per cent. of children treated.

P. W. B-S.

HIRAI (Seishyu). [**On the Double Refractory Lipoid found in the Urine of Beriberi.**]—*Gun-I-Dan-Zasshi.* (*Jl. Japan Milit. Med. Assoc.*). 1922. Apr. No. 112. [Summarized in *Japan Med. World.* Tokyo. 1922. Sept. 15. Vol. 2. No. 9. p. 268.]

The author states that he was able to demonstrate by means of the polarimeter the presence of double refractive lipoids in the urine of 11 out of 21 cases of severe or moderately severe beriberi, but not in mild or complicated cases. These positive results are analogous to those found in cases of chronic nephritis, and indicate that in the beriberi kidney lipoidal degeneration must be present in some instances.

P. W. B-S.

DE LANGEN (C. D.). **The Significance of the Lipoid-Metabolism in Beriberi. Lipochromes as Vitamines (First Communication).**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 1. pp. 270–323.

The author states that the study of beriberi has been more and more removed from the clinic to the laboratory but requires their complete co-operation. Many years' work has stimulated interest in the biochemical factors in relation to vitamins. It is necessary to bear in mind that with the same diet and conditions different results are obtained with different animals: for instance, maize is sufficient for pigeons and rats, but not for guinea-pigs, goats, and rabbits; dried yellow peas for pigeons and rabbits, but not for guinea-pigs. Deductions, therefore, from animal experiments must be made with caution. We know little of the chemical composition of vitamins though something of their physiological action, and but little of what takes place in the body under the influence of vitamin deficiency. McCARRISON's work has, however, largely increased our knowledge.

The author took up the study of the chemical composition of the different organs and tissues, but especially that of the blood in cases of human beriberi and polyneuritis in animals. He found that in these conditions (1) the total fat content falls; (2) the lipoids are considerably decreased; (3) the lipocytic coefficient changes; (4) the phosphorus diminishes; (5) the calcium content is low; (6) the blood sugar is high and the other components are about normal. In examining a number of ships he found beriberi in all but one of them, the dietary being the same; in the one that was free, which had about 2,000 on board, the fish supplied instead of being grey was yellow. The colour was caused by the presence of luetine, a lipochrome nearly always present with some lipoids; there was also more cholesterin and phosphatides. The luetine is more or less present in all normal serum but is absent in beriberi, reappearing when the cases are cured.

The lipoids are divided by the author into fat, cholesterin, phosphatides, and cerebrosides. Normally the phosphatides and cholesterin occur together in definite proportions, $\frac{\text{Cholesterin}}{\text{Lecithin}}$, which equals the lipocytic coefficient; on this quotient depend the electrical reaction and the resistance of the red cells. It has great importance with regard to oedema, the water content of tissue being dependent on this coefficient. Its rise in oedema causes a check in the diffusion of ions, and a hindrance in the movement of these is followed by water retention.

If the cholesterin content goes up, as in eclampsia, the phosphatides tend to rise to the same level. The latter break up most readily in the process of metabolism, and in inanition the cholesterin quotient is higher than normal. In this lipoid metabolism the suprarenals play an important rôle, especially in deficiency disease. Nerve degenerations also depend upon the amount of the phosphatides. We do not know whether these latter can be built up in the organs and glands, or are only received in the foods; probably for their formation they require a special ferment, enzyme or catalysator, which is a vitamin. New bones have a great reserve store of phosphatides which during further development diminish, and they are also reduced in conditions of inanition.

He concludes that "the symptoms of beriberi are the consequence of a disturbance of the lipoid metabolism, and this is due to the lack of a substance necessary for the synthesis of the phosphatides, namely, vitamins." In favour of this view he gives a large number of experimental facts: the distribution of lipochromes and vitamins is almost identical; in the milk of cows out at grass the lipochromes are increased with the vitamins; both are found most abundantly in the organs and tissues which are most important for life. The paper contains a record of a large amount of very interesting work, but space does not permit of further report. It should be read *in extenso* by all interested in the subject.

P. W. B-S.

KIHN (Berthold). **Ueber die sogenannte Beriberi der Affen und der Tiere ueberhaupt.**—[The So-called Beriberi of Monkeys and Other Animals.]—*Jl. f. Psychol. u. Neurol.* 1922. Vol. 27. No. 6. pp. 316–324.

This is chiefly a criticism of the view held by WIEDHOLZ that vitamins are hormones of endocrine origin, without which any form of nourishment would be insufficient. The author agrees neither with his premises nor conclusions, but holds that beriberi is due to the deficiency of vitamin in the food itself. The clinical signs and pathological anatomy differ much in man and animals; therefore conclusions should be drawn with the greatest caution. He states that very little has been done in the way of research on the pathological changes in the brain of human beriberi cases, and asks that specimens may be sent to him at the Neurological Institute, Berlin. He also states that the clinical evidences in the cases described by WIEDHOLZ show clearly that the conditions were produced by insufficient supply of the necessary foods and accessory factors.

P. W. B-S.

PALMER (Leroy S.) & HOFFMAN (Clara T.). **Biochemical Properties of the Blood of Pigeons in Polyneuritis and Starvation.**—*Proc. Soc. Experim. Biol. & Med.* 1922. Vol. 20. No. 2. pp. 118–119.

The authors' experiments with pigeons indicate that the decrease in the total solids and in the nitrogenous constituents of the blood, both protein and non-protein, as well as the diminution of erythrocytes, are probably due to the self-imposed starvation which accompanies the later stage of polyneuritis in pigeons. It is to be noted that simple inanition in its advanced stages is accompanied by a decline in the relative amount of protein in the blood which is not apparent even in acute polyneuritis. This result is contrary to the recent observations of PACCHINSA (*Ann. di Clin. Med.*, 1921, 11, 271). The total number of birds used was 51 ; 13 were normal, 8 are described as normal starved, 16 as acute polyneuritis, 7 as latent polyneuritis, and 7 as " relieved " polyneuritis.

P. W. B-S.

VAN DER WALLE. **The Presence of the Antineuritic and Antiscorbutic Vitamins in Urine.**—*Biochem. Jl.* 1922. Vol. 26. No. 6. pp. 713–726. With 5 charts.

The wide distribution of antineuritic substances has been abundantly shown. FUNK proved that purin and pyramidine derivatives act favourably. COOPER was able to cure pigeons with alcoholic extract of faeces. MUCKENFUSS found small quantities in ox bile, human urine and saliva, and GAGLIO also found it in the urine. A further study was therefore carried out by the author. He found that concentrated normal urine had a favourable influence on the polyneuritis of pigeons, that the antineuritic factor was not destroyed by heating at 37° C. for 16 hours, but that a temperature of 130° for one hour destroyed it, and the ash was ineffective. The active principle could be extracted by charcoal, and the urine thus treated was ineffective. Charcoal shaken up with a solution of inorganic salts, containing the cations and anions present in the urine, had only a slight effect. The curative action of the urine was not due to the presence of bacilli, but yeast cultivated in urine, to which 5 per cent. glucose had been added, possessed a strong curative action. The urine of a dog had as strong curative properties as that of man, but when the dog was fed upon a vitamin-free diet the urine lost its curative power. Fresh normal urine and dried urine were both active if given in sufficient quantities. The experiments show that a small quantity of antineuritic vitamin is present in the urine, and that 5 cc. of urine, concentrated, was an effective dose. The author was unable to detect the presence of antiscorbutic vitamin in urine, but as HARDEN & ZILVA have shown that charcoal does not absorb the antiscorbutic factor, this method was not applicable. There are several useful tables and the charts show weights, etc., of the antiscorbutic experiments.

[The only colloids which are known to pass through the healthy kidney are " ferments " (such as diastase), which is a factor of importance when considering the character of these antineuritic vitamins.]

P. W. B-S.

SHIPLEY (P. G.), MCCOLLUM (E. V.) & SIMMONDS (Nina). **Studies on Experimental Rickets. IX. Lesions in the Bones of Rats suffering from Uncomplicated Beriberi.**—*Jl. Biol. Chem.* 1922. Dec. Vol. 49. No. 2. pp. 399–410. With 4 plates & 4 charts.

Very little has been said of the condition of the bones in animals suffering from beriberi. The authors found that rats fed on diet deficient in water-soluble B after 45–50 days developed signs of beriberi ; they all became thin though no definite deformity of the bones was observed. Post mortem the bone changes were exactly the same as seen in guinea-pigs fed upon a scurvy-producing diet—rarefaction, haemorrhages, and destruction of the bone marrow. The haemopoietic marrow may entirely disappear. FINDLAY has shown that the blood of rats with polyneuritis is like that found in human beriberi. Rats fed upon the diet that produces scurvy in guinea-pigs grew normally for at least 105 days, and their bones showed no abnormal signs, demonstrating that with an otherwise good diet rats can dispense with vitamin C. This had been observed by MCCOLLUM and SIMMONDS. Dogs, too, remain well for a long time without vitamin C.

Rats on a diet deficient only in fat soluble A show osteoporotic changes in the bones, but these have no resemblance to those of scorbutic animals.

P. W. B-S.

OKUDA (Midzuho). [**On the Action of Rice Embryo against Avian Polished Rice Disease.**]—*Kenyokwai Zasshi.* (*Jl. of Kenyo Med. Soc.*). 1922. May. No. 158. [Summarized in *Japan Med. World.* Tokyo. 1922. Oct. 15. Vol. 2. No. 10. p. 305.]

The extract was made by thoroughly washing the embryo of crushed rice to free it completely from bran, and extracting it with 90 per cent. alcohol for 2–3 hours on a warm bath. The alcohol is then evaporated, and the sediment is infused several times with petroleum ether. This is evaporated completely, and the residue is treated with acetone several times and thus freed from any fatty matter, leaving only the vitamin substance. This embryo extract had a high therapeutic efficiency against polished rice disease.

P. W. B-S.

IRIYE (Eisai). [**On Avian Polished Rice Disease in Special Reference to the Conditions of the Experimental Destruction of the So-Called Beriberic Vitamine.**]—*Nisshin Igaku* (*Progress in Med.*). 1922. June. Vol. 11. No. 10. [Summarized in *Japan Med. World.* Tokyo. 1922. Nov. 15. Vol. 2. No. 11. p. 327.]

The author fermented different forms of rice (polished, unpolished, crude, etc.) by means of faecal extracts, and found that when vitamin or "oryzanin" was mixed *in vitro* with fermented juice of *polished* rice and kept at 37° C. for seven hours it completely lost its curative effect, but that it did not when it was mixed with the fermented juice of *crude* rice. From these observations he conjectures that after ingestion of polished rice a similar fermentation destructive of vitamins might occur in the human intestine.

P. W. B-S.

MEDINA JIMÉNEZ (Rafael). **El problema de nuestro beriberi.**—*Gac. Med. de Caracas.* 1922. Oct. 31. Vol. 29. No. 20. pp. 235-238.

This article comprises a general statement of the reasons which have led the author to think that in Zamora at all events beriberi cannot be ascribed to a rice diet, nor to avitaminosis, but to some biological cause, bacterial or protozoal. No fresh evidence is adduced.

H. Harold Scott.

TOYAMA (Chinkichi) (Director of the Tokio Microscopical Laboratory Tokio). **Studies on the Cause of Beriberi.**—1922. 13 pp.

In this short monograph the author gives the results of his ten years study of beriberi. The greater part has already been published and reviewed, and there is nothing new to record.

P. W. B-S.

MONTES (José E.). **Hemocultivos en el Beriberi.**—*La Clinica Castellana.* Valladolid. 1922. Oct. Vol. 25. No. 4. pp. 188–189.

SCURVY.

DONALDSON (S.). **Some Aspects of Scurvy in the Native, and its Treatment by Orange Juice Intravenously.**—*S. African Med. Rec.* 1923. Jan. 13. Vol. 21. No. 1. pp. 7–12. With 5 text figs.

This paper is an amplification of one published in 1921 [see this *Bulletin*, Vol. 19, p. 417] in which the intravenous method of injection of diluted neutralized orange juice was demonstrated in scurvy cases. A further series (number not stated) has been treated with good results and four are described in detail—in one a total of 560 cc. was injected during a period of nine weeks. The author states that recovery sets in with dramatic suddenness, sometimes after five weeks' treatment, supporting the theory that " a considerable reserve of protective vitamin is stored up in one or more of the internal organs and that the onset of recovery is largely dependent upon the depleted reserve being re-established." He found 10 to 15 cc. to be the most efficient dose. Pawpaw juice is less suitable and requires to be given with caution.

P. W. Bassett-Smith.

ARON (Hans). **Alimentäre Anämie und Skorbut.**—*Klin. Woch.* 1922. Oct. 7. Vol. 1. No. 41. pp. 2035–2039. With 3 text figs.

The author states that a new epoch of our knowledge of alimentary anaemia commenced when CZERNY showed that in infants who had been brought up entirely on milk the illness could be cured by reducing the milk and substituting vegetables and meat. KLEINSCHMIDT applied the principle not only to cases of slight anaemia but to those of a more pernicious type with enlargement of the liver. Their view that the harmful factor is found more particularly in the fat of the milk, which had to be reduced, is not held by the author, who found that the essential point in treatment is not the reduction of the milk, *but in the increase of the vegetable vitamins.* As these are in relatively small amounts in the food, the diet should be concentrated so as to keep within limits the bulk of food given to the infant.

This alimentary anaemia is comparable with scurvy and Barlow's disease. He found scurvy symptoms in 7 out of 15 cases of alimentary anaemia, and he believes that we should look upon scorbutic anaemia as of alimentary origin, but whether the same factor is the cause of both is unproven. He points out and illustrates with skiagrams the changes which take place in the long bones both before and after treatment, and shows the characteristic saddle-like depression on the forehead of sucklings suffering from the anaemia. The case shown had a red blood count of 2,000,000, white cells 31,800, and normoblasts 2,340. Differential points noted are that the alimentary anaemia occurs only in unhealthy children and is mostly chronic, whereas infantile scurvy may develop in children who are gaining weight satisfactorily. The dystrophy due to the lack of water-soluble vitamins B, C, and D (FUNK) is common to both, and their supply in the diet is essential for cure, together with a combination of foods giving ample caloric value and fat-soluble factor.

P. W. B-S.

BLACKHAM (R. J.). **Dried Milk in Infantile Scurvy.** [Correspondence.] —*Lancet.* 1922. Oct. 7. p. 780.

Blackham opposes the view of THURSFIELD [this *Bulletin*, Vol. 19, p. 765] that dried milk is a cause of infantile scurvy. He finds that not only are children on this free from scurvy, but it is of special value for infants of the poorer classes who are doing badly. French doctors use it with advantage for atrophic children, and HART, STEENBOCK, and ELLIS have shown experimentally that it is most valuable. He suggests that THURSFIELD's preparations may have been faulty, defective, or aged samples. When pure cows' milk is not available dried milk is the most reliable substitute in the hand feeding of infants.

[The uncertainty with regard to the reliability of the preparations on the market is a deterrent to the use of the dried milks for infants.]

P. W. B-S.

VAN DRIEL (B. M.). **Bier en Scheurbuik.** [Beer and Scurvy.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1922. Vol. 62. No. 3. pp. 306–331. With 2 figs.

Contrary to the opinion of A. Henderson SMITH [see this *Bulletin*, Vol. 13, p. 360] who attributes antiscorbutic value to beer brewed on old-fashioned lines, and thinks that the loss of this power in the modern product is due to the use of highly dried, kilned malt, van Driel concludes from his experiments and from historical facts, that (1) the malt in the earlier stages of the brewing process, before any higher temperature has been applied to it, possesses no antiscorbutic power; (2) that in the history of arctic expeditions in former times the delay in the appearance of scurvy may be readily explained by the more or less large quantities of fresh meat in the dietary. Besides this, hops, and with the hops boiling of the beer, was introduced in the brewing business about 1000 A.D., which fact makes it still more improbable that in the 16th century and later any antiscorbutic power should be attributed to the usual sorts of beer.

Hard work seems to hasten the outbreak of scurvy.

[The quickly fermented beer of South Africa has been shown by DELF and others to have some antiscorbutic power.*—P. W. B-S.]

W. J. Bais.

MOURIQUAND (G.) & MICHEL (P.). i. **Sur la valeur antiscorbutique du jus de citron stérilisé et sur la question des doses d'antiscorbutique nécessaires au métabolisme.**—*C. R. Soc. Biol.* 1922. Dec. 23. Vol. 87. No. 39. pp. 1403–1404.

ii. ——. **Adjuvants non antiscorbutiques de la substance antiscorbutique.** —*Ibid.* pp. 1404–1407.

i. Animals kept upon barley and dried hay, with lemon juice (sterilized at 120° C. for 1½ hours) up to 10 cc., developed scurvy signs after 80 to 100 days, or later. This retardation of symptoms indicates persistence of part of the antiscorbutic substance in the sterilized juice. Animals kept upon 40 gm. of barley alone were tested with 5, 10, 20, and 40 cc. of sterilized lemon juice; with 5 and 10 cc. scurvy appeared on the 24th day, with 20 cc. between 31st and 36th, with 40 cc. they

* "Studies in Experimental Scurvy," Publication No. 14 of the South African Institute for Medical Research, pp. 46–52.

were well up to 63rd day. Thus there is a relation between dose and time of onset of symptoms which shows that the antiscorbutic substance does not act merely as a catalyser.

ii. Acute and chronic scurvy can be variously induced by different methods of feeding with foods having no antiscorbutic power. Thus on barley alone guinea-pigs die about the 31st day: if dry hay is added to the diet, equilibrium is preserved longer, but death occurs about the same time, which shows that the hay has in it no anti-scurvy substances. With 40 gm. of barley and 5 to 10 cc. of sterilized lemon juice scurvy appears about the 25th day; but if to this ration of barley and 5 cc. sterilized lemon juice 10 gm. of dried hay be added the onset of scurvy is delayed until the 77th day, and with 20–40 cc. of sterile lemon-juice no sign of scurvy was found in the bones of animals killed on the 66th day.

These experiments show that dried hay, non-antiscorbutic by itself, augments the action of small doses of the antiscorbutic remaining in the heated lemon juice.

When the alimentary equilibrium is profoundly disturbed, as on a diet of pure barley, by the deficiency of such indispensables as amino acids, salts, and lipoids, the deprivation of antiscorbutic substance is rapidly shown; but when these important elements are added to the diet as by addition of hay, the deprivation of antiscorbutic is much less evident; it seems as if the restored alimentary equilibrium favoured the activity of or reduced the demand for the antiscorbutic substance.

P. W. B-S.

HART (E. B.), STEENBOCK (H.) & LEPKOVSKY (S.). **The Antiscorbutic Vi.amine. 1. A Study of its Solubility from Desiccated Orange Juice.**—*Jl. Biol. Chem.* 1922. May. Vol. 52. No. 1. pp. 241–250. With 5 charts in text.

In this first part of a series of studies on the antiscorbutic vitamin an attempt has been made to determine its solubility in a number of organic solvents. HESS and UNGER have reported that it is soluble in 80 per cent. alcohol and many have shown that under certain conditions it can be extracted by water. Orange juice was used to supply the vitamin and the experimental animals were guinea-pigs under basic dietetic conditions previously described. The weight curves were charted and four animals were used for each experiment. The vitamin of orange juice desiccated without heat was found to be soluble in 80 to 95 per cent. ethyl alcohol and methyl alcohol and the solution protected the animals from scurvy, but it was insoluble in butyl alcohol, petroleum ether, acetone, ether, chloroform, and ethyl acetate. The results of these tests indicate that the antiscorbutic vitamin is not a fat nor a lipin.

P. W. B-S.

BEZSSONOFF. **Effets sur les cobayes d'une préparation antiscorbutique.** —*C.R. Acad. Sci.* 1922. Nov. 6. Vol. 175. No. 19. pp. 846–848.

An antiscorbutic preparation was made from fresh cabbage juice by evaporating it down to dryness in vacuo at a temperature not higher than 35° C.; 5 parts of the powder were equal to 10 of the juice. It was very hygroscopic and contained neither fats nor proteins. This

is called product C. Guinea-pigs were used as the test animals, and were fed on a basic diet plus autoclaved milk, some with addition of cod liver oil, and some with various quantities of product C. It was found that 1/10 gm. of product C was sufficient to maintain normal development of a guinea-pig of 600 gm., and that cod liver oil exerted a harmful action on the guinea-pigs in doses of 7 mgm. per day. This could be partly counterbalanced by strong doses of the anti-scorbutic product.

P. W. B-S.

MOURIQUAND, MICHEL & BERTOYE. **Effets de l'évolution d'une infection par le bacille de Koch sur la marche du scorbut expérimental du cobaye.**—*C.R. Soc. Biol.* 1922. July 15. Vol. 87. No. 26. pp. 537–538.

A series of experiments was carried out to determine whether a tubercular infection hastened the development of experimental scurvy, and whether tubercular animals on a non-scurvy diet showed any evidence of the latter disease; 38 guinea-pigs were used. Scurvy signs were not found in tubercular animals on a normal diet, neither was there any increase in the rapidity of the disease in animals on a deficiency diet. The author states that these conclusions so far only apply to guinea-pigs, and not to the infection in man.

P. W. B-S.

AMOEBIASIS AND DYSENTERY.

Amoebiasis.

Montier (Francois). **Les formes dissimulées de l'amibiase intestinale.** —*La Médecine.* 1922. Dec. Vol. 4. No. 3. pp. 199–204.

Any form of colitis may be amoebic in origin and it is with the more obscure forms that this paper deals. The patient may even be constipated. Especially misleading are those cases of intestinal amoebiasis in which the main symptoms are located to the right hypochondrium or to the hepatic flexure of the colon in which the diagnosis has to be made from hepatic and biliary disease. Seasonal haemorrhagic colitis is usually not amoebic in origin. The gastralgic form simulates a flatulent dyspepsia; the typho-appendicular form appendicitis; inflammatory amoebic induration of the caecum tuberculosis. Lesions in the rectum or sigmoid may simulate vesical or prostatic affection or even in women left salpingitis. Cachexia due to chronic amoebiasis may arouse suspicions of malignant disease or intestinal tuberculosis.

Associated infections are usually due to malaria and it is difficult to assign the proper rôle of concomitant Lamblia infection or symbiosis with intestinal spirochaetes. Sigmoidoscopic examination may give valuable information and the entamoebae may be demonstrated in scrapings made from the lesions.

Attention is drawn to the frequent association of cancer of the rectum with intestinal amoebiasis. The author has seen two cases and Bensaude an equal number.

In resistant cases the author has had good result with the administration *per os* of capsules containing novarsenobenzol (2 containing 0·05 gm. each) or this drug may be given in an enema (dose 0·1 gm. to 0·3 gm. in 60 cc. of water or dissolved in 100 cc. of a mucilaginous decoction).

P. H. Manson-Bahr.

Galmozzi (Ferruccio). **Sulla dissenteria amebica e sue complicanze.**—[Amoebic Dysentery and its Complications.]—*Giorn. d. Clin. Med.* Bologna. 1922. Aug. 30. Vol. 3. No. 12. pp. 454–462.

Six cases are recorded in detail. Two had ordinary dysentery, one of whom was a native and had never left Italy. A third had an hepatic abscess, and the remaining three hepatitis. Amoebae were found in the stools of five of them. Recovery occurred in all six after injections of emetine. For chronic cases the author recommends, in addition to the emetine (8 cgm. daily), an injection of 30 cgm. of neosalvarsan every five days.

H. Harold Scott.

Sellards (Andrew Watson) & Leiva (Lamberto). **The Effect of Stasis on the Development of Amoebic Dysentery in the Cat.**—*Philippine Jl. Sci.* 1923. Jan. Vol. 22. No. 1. pp. 39–42.

Experiments on the transmission of amoebic dysentery to the lower animals has emphasized three facts: firstly that during the subpassage of virulent strains of *E. histolytica* through a long series of kittens by rectal inoculation a few individuals escape infection, though on reinoculation these animals are found to be just as susceptible

as are normal animals; secondly, when the caecum is exposed and the injection material introduced into the lumen of the bowel, infection takes place with surprising regularity; thirdly whether introduced into the caecum or *per rectum* the initial lesions occur in the extreme lower part of the bowel. The question how *E. histolytica* can injure and penetrate the normal mucosa is undecided, but the stasis occurring in the distal end of the bowel certainly affords an opportunity for the organisms to gain a foothold. The subsequent dissemination of the lesions indicates that there are no pronounced differences in the susceptibility of various areas of the large bowel. This point was tested experimentally by placing a broad ligature round the middle of the bowel so as to obstruct the lumen. A suspension of *E. histolytica* was then injected into the caecum and subsequently it was found that amoebic lesions had developed above, but not below the ligature.

Further experiments, in which cats were injected intracaecally and *per rectum* with infective material, brought out strikingly the importance of intestinal stasis as one of the factors determining the location of the initial lesions in experimental amoebic dysentery in the cat. The distribution of amoebic lesions in man demonstrates the tendency for ulcerations to predominate in the caecum, ascending colon, rectum and sigmoid, points at which intestinal stasis is likely to occur.

P. H. M-B.

FIESSINGER (Nöel). **L'épreuve d'emétine dans le diagnostic des petits abcès du foie forme à fruste.**—*Jl. des Praticiens.* 1922. Dec. 16. Vol. 36. No. 50. pp. 825–827.

This purely clinical study emphasizes the difficulties and dangers attending the diagnosis of liver abscess in cases when few, if any, of the characteristic symptoms or signs are present, as is especially the case where the abscesses are small and multiple. The author is enthusiastic about the therapeutic action of emetine and is of opinion that it can be used as a means of diagnosis in cases of doubt.

P. H. M-B.

ESCHBACH (H.). **Hépatite amibienne aiguë à forme de fièvre cachectisante.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1922. Nov. 16. Year 38. 3rd Ser. No. 31. pp. 1487–1491.

In amoebic hepatitis the accompanying pyrexia may dominate the clinical picture and effectually mask the seat of the trouble. In this condition, the right or even, sometimes, the left pulmonary base may be involved. Other cases may show bronchitic symptoms at the apices reminiscent of tuberculosis, but the effect of injections of 0·04 gm. emetine upon the fever and the symptoms is instantaneous and magical, so as to render the diagnosis no longer in doubt. Two cases are quoted in support of this view.

P. H. M-B.

LENOBLE (E.) & JEGAT (Y.). **Dysenterie amibienne avec gangrène limitée de l'angle hépatique du colon propagée au foie.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1922. Dec. 7. Year 38. 3rd Ser. No. 34. pp. 1582–1585.

A clinical account of a solitary case. The patient who had suffered much from dysentery had complained of "shoulder pain" for eight years. Radioscopic examination revealed an aneurismal dilation of

the ascending arch of the aorta. The Wassermann was strongly positive. Ascites and diarrhoea supervened. At autopsy the anterior portion of the right lobe of the liver and the hepatic flexure of the colon were necrotic. Entamoebae were found in the diarrhoeic stool on one occasion only. The authors are of the opinion that the condition of the liver and gut is to be attributed to these organisms.

P. H. M-B.

SELLARDS (Andrew Watson) & LEIVA (Lamberto). **Investigations concerning the Treatment of Amoebic Dysentery.**—*Philippine Jl. Sci.* 1923. Jan. Vol. 22. No. 1. pp. 1–37.

This paper is divided into three portions: (1) Experiments upon cultural limax amoebae *in vitro*; (2) Experimental treatment of cats infected with *Entamoeba histolytica*; and (3) Clinical observations.

1. Experiments upon cultural amoebae *in vitro*.—The amoeba used was a "limax type" isolated originally from the stool of a healthy person; and the substances tested were emetine, quinine, neosalvarsan, cholalic acid, benzyl benzoate, papaverine, *Castela nicholsoni* Hooker, *Tinospora rumphii* Boerläge and other substances. The substances which exerted a restraining action on growth were emetine (even in a dilution of 1 in 1,000,000), quinine hydrochloride in a dilution of 1 in 100,000, benzyl-benzoate in suspension (1 in 10,000), and *Castela nicholsoni*. The toxicity of the other substances was low. It is not argued that these results can be applied directly to *Entamoeba histolytica* in the living tissues.

2. Experimental treatment of cats.—The spontaneous recovery of control animals was occasionally observed. The authors found that, though kittens are remarkably susceptible to *Entamoeba histolytica*, it is difficult to infect adult cats, and in a long series of experiments many irregularities occur. The incubation period is remarkably short; an animal sacrificed the third day after intrarectal inoculation already showed superficial lesions of the bowel. Early diagnosis is essential in experimental treatment.

Subcutaneous injection of emetine was not well tolerated and showed little or no effect upon the amoebae; so it (and other drugs tested) were given in moderately strong solution by rectal injection, the animals being held head downwards for an hour afterwards to preclude the escape of the injection. Emetine is distinctly toxic for cats; given *per rectum* up to 10 mgm. per kilo. of body weight it caused no loss of appetite, whereas this amount, when injected subcutaneously, produced nausea and vomiting almost constantly. In the treatment of kittens two difficulties are encountered: firstly, being very susceptible to amoebic infection, they require maximal doses of emetine; secondly the rapid development of lesions in the bowel greatly facilitates the secondary invasion by bacteria. Streptococci and other organisms have been isolated by blood culture, and early treatment with emetine does not protect against this bacterial invasion. One animal responded promptly to treatment with emetine up to 35 mgm. per kilo. of body weight, but became very ill 18 days after primary inoculation with amoebae. Death was due to septicaemia; no lesions being found in the bowel at autopsy.

Two adult infected cats were treated with emetine solution, 1 : 1000 *per rectum*, till totals of 22·5 and 20 mgm. per kilo. body weight had been reached. The animals remained well for a long period subsequently and died of other causes, no lesions of the bowel being found

at autopsy. If treatment was delayed the therapeutic effect of emetine was found to be by no means as efficacious, and experience indicated that only a small margin exists between the effective and tolerated doses; on the other hand the drug does not appear to exert any prophylactic effect.

Quinine bihydrochloride (200 mgm. per kilo. in 1 : 50 solution) improved the symptoms, though it did not eradicate the infection. It is recommended that in this case treatment should be commenced with strong solutions

The outcome of these investigations is that rectal injections of emetine should be used in man in preference to subcutaneous or intramuscular inoculation. On the other hand the experiments contraindicate the intravenous injection of emetine as producing the maximal toxic effects of the drug. It is useless to trifle with minimal doses of emetine. The comparative pathology of amoebic dysentery in man and cats has a distinct bearing upon the therapeutics of the disease. In young kittens the disease produces an intense diffuse inflammation, but in older cats the process approximates much more closely the conditions found in man.

Until there is experimental evidence to the contrary the authors prefer to adhere to the working basis that recovery from amoebic dysentery in man and in the lower animals results from the combined action of the natural resistance of the host and a moderate action of emetine on the amoebae. The summation of these two factors is necessary for radical cure; a lowering of either allows the disease to progress; minimal doses of emetine do not modify the course of the infection. The effect of feeble natural resistance is illustrated by the fulminating infections seen in kittens.

A comparison of the effective dosage of emetine in man and in experimental animals is given, arranged to show the initial doses required to check the symptoms and the total quantity for eradicating infection.

	In man.	*In cats.*
	mgm.	*mgm.*
Initial dose ..	2– 4	7–10
Total quantity	18–30	20–30

The figure, 18 mgm. per kilo. for the total quantity in man, is based on WENYON & O'CONNOR's recommendation of 1·5 gr. of emetine for twelve consecutive days. The fatal dose of papaverine for cats is stated to be 100 mgm. per kilo. body weight when injected subcutaneously, but this statement was not confirmed. The lethal dose of quinine for cats was not determined.

3. Clinical observations were made on man using three species of plants representing three genera of the Simarubaceae; namely *Harrisonia perforata, Brucea amarissima* and *Castela nicholsoni*. The first was not especially toxic for animals and was inefficacious against amoebae; the second proved very toxic for animals, produced nausea in the patients and had little effect upon their amoebae; the third possessed distinct toxic principles, but was well borne by the patients and in five cases it gave prompt relief of symptoms accompanied by the disappearance of amoebae. This work suggests that *Castela nicholsoni* compares favourably with emetine, both in the immediate and final effects of treatment, but that neither it nor emetine, as at present employed, are ideal agents for the eradication of *E. histolytica* infections in man.

P. H. M-B.

RAVAUT (Paul). **Les deux modes d'attaque dans le traitement de l'amibiase.**—*Rev. pratique des maladies des pays chauds.* Paris. 1922. Oct. Vol. 1. No. 1. pp. 8–17.

This paper is an excerpt from the volume by the same author on syphilis, malaria and amoebiasis which has but recently been reviewed in this *Bulletin* (Vol. 19, p. 627). The author believes in the value of a combined emetine-arsenical therapy in the treatment of amoebiasis. The " cure " advocated consists of ten intravenous injections of novarsenobenzol interspersed with doses of emetine. In a period of 40 days the patient receives 3 gm. of novarsenobenzol and 18 injections, totalling 1·08 gm., of emetine.

The alternative is the administration of the author's paste (charcoal, bismuth and ipecacuanha) together with novarsenobenzol, either by the mouth or in the form of an enema. The necessity of prolonged treatment, as in the case of syphilis, is insisted upon.

P. H. M-B.

RENNIE (P. Manson). **Emetine Bismuthous Iodide in the Treatment of Amoebiasis.**—*Lancet.* 1922. Dec. 30. pp. 1374–1376.

This study is based upon 87 cases of amoebiasis under treatment at the hospital for Tropical Diseases, London. The conclusion is reached that emetine bismuth iodide—given as a loose powder in gelatin capsules in 3 gr. doses over an average period of 12 days—has a definite curative effect in amoebic dysentery; though sometimes it may be necessary to give two or three courses.

It is well known that a certain proportion of cases proves refractory, but, on the other hand, emetine injections, although palliative, do not constitute a cure in the same sense.

The treatment must be regulated by the tolerance of the patient; it is not necessary to push the drug to the limit in every case.

The patient must be treated in bed; the diet should be light and easily assimilated, but need not necessarily be restricted to milk.

Delayed vomiting (four hours after ingestion of the drug) does not indicate non-absorption, but rather that the drug is taking effect.

Diarrhoea should be regarded as typical of the action of this drug and, as a rule, three to four dark fluid motions should be passed daily. Restriction in diet for a month after treatment is advisable. Increase in weight is very striking after a successful course of E.B.I.

P. H. M-B.

MARTINDALE (W. H.). **Solubility of Emetine-Bismuth-Iodide.** [Correspondence.]—*Lancet.* 1923. Jan. 20. p. 158.

This note points out, as stated in the Extra Pharmacopoeia (Vol. 1) that, when 0·1 gm. E.B.I. is shaken with 200 cc. 0·2 HCl., an opalescent fluid is formed containing bismuth as oxychloride and emetine in solution. The solubility of the alkaloidal portion in physiological acid at body temperature upsets the theory on which the compound was introduced.

P. H. M-B.

i. BIRT (Ed.). **Yatren und Amoebenruhr.**—*Muench. Med. Woch.* 1923. Feb. 16. Vol. 70. No. 7. pp. 205–206.
ii. MENK (W.). **Yatren und Amöbenruhr. (Zu der gleichnamigen Veröffentlichung von Dr. Ed. Birt in Nr. 7 der Münch. med. Wochenschr. Jahrg. 1923.)** *Ibid.* Mar. 9. No. 10. p. 306.

i. The results of yatren treatment in Shanghai are here recorded. It is best given in 10 per cent. solution and injected *per rectum* in quantities of 100 cc. twice daily [see this *Bulletin*, Vol. 19, p. 31.] The clinical records of 28 cases are given, 14 old chronic cases and 14 more recent. In a certain number, for various reasons, treatment had to be abandoned, but sixteen must be regarded as completely cured by yatren. In old-standing cases its injection appeared to cause no inconvenience, but in some acute cases it gave rise to very definite and real pain. Visual control by means of the sigmoidscope would be very desirable, but is impracticable for obvious reasons in an Eastern country.

The author regards yatren as a very efficient adjuvant in the treatment of amoebic dysentery and possibly also sprue, and advocates its wider application. One advantage is that patients can be treated as out-patients.

ii. Menk thinks that yatren acts equally well in fresh and in long-standing infections. BIRT's statement that a 10 per cent. solution was employed must be incorrect; if not it explains the occurrence of the tenesmus, etc., noted after the injections. Menk uses initially a 5 per cent. solution in a volume of 200 cc. introduced after careful lavage of the bowels; later larger quantities up to 400 cc. were used, and could be retained for several hours. He considers that BIRT's failures are to be ascribed to faulty technique.

Menk thinks that yatren injections should be combined or alternated with emetine therapy.

P. H. M-B.

KUENEN (W. A.). **Yatreen en amoebiasis.** [Yatren and Amoebiasis.] —*Nederl. Tijdschr. v. Geneesk.* 1922. Vol. 66. Pt. 2. No. 15. pp. 1711–1713.

Very favourable results of yatren (1 gm. *per os* three times per day for 8–14 days) in four cases of amoebiasis, three of which were of long standing.

W. J. Bais.

i. COZANET. **Observation d'un cas de mort subite consécutive à une hépatite suppurée.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1922. May–June–July–Aug. Vol. 20. No. 2. pp. 231–233.
ii. GOODHART (Gordon W.). **Emetine Bismuthous Iodide in the Treatment of Amoebiasis.** [Correspondence.]—*Lancet.* 1923. Jan. 20. pp. 157–158.

i. Records a sudden death, apparently from sun-stroke; at autopsy an hepatic abscess, the size of an orange, was found.

ii. This note contains the author's personal testimony to the value of E.B.I. in the treatment of refractory cases of amoebiasis. He considers that oil of chenopodium is worth a more extended trial.

P. H. M-B.

BACILLARY DYSENTERY.

MINISTRY OF HEALTH. Reports on Public Health and Medical Subjects. No. 14. Dr. T. W. WADE'S **Report to the Welsh Board of Health on the Occurrence of Bacillary Dysentery in the Ogmore and Garw Urban District in the County of Glamorgan.**—24 pp. With 1 map. 1922. London: H.M. Stationery Office. [Price 1s. net.]

An outbreak of mild bacillary dysentery occurred in the Ogmore Vale, Glamorganshire, in May 1921. The first cases occurred suddenly on May 11, and the maximum number was reached five days later; it is estimated that in all some 1,100 persons suffered from mild dysentery.

Three hundred and twelve cases attended by local practitioners were distributed in 148 houses. The total number of occupants of these houses was 947 and of these 312 were attacked (32·9 per cent.), the greater number being children under five years of age. In the age period of working life (15 years and upwards) the higher incidence upon females may be explained by the greater risks of infection incurred in nursing the sick. On June 1, notifications of similar cases were received from villages at the upper end of the valley, the infection being directly traced to cases at Ogmore Vale. In the period May 11 to August 31, 1921, there were 12 deaths from dysentery; 5 were in infants under 12 months of age; of the remainder 5 were in children 1 to 5 years of age, and two in women aged 59 and 79 years respectively. Bacteriological and serological investigations inculpated the *B. dysentericus* (strain W of the Oxford series) as being the causative organism. Specimens of stools of three patients were taken at an early stage of the disease, and from two, organisms agglutinating with the polyvalent serum of the Lister Institute were obtained. The serums of these three patients agglutinated *B. dysentericus* W up to a dilution of 1 : 800. Out of 23 suspected bloods tested against this organism:—9 agglutinated up to 1 : 800, 1 up to 1 : 400, 3 up to 1 : 200, 3 up to 1 : 100.

The outbreak followed a serious drought, and was limited, in the first instance, to a defined area, coincident in extent with the area supplied with water from the western main. Evidence showed that the houses situated nearest that source of supply were more seriously affected than those more remote. A search was made for the original source of infection without success. Since the war the number of carriers of *B. dysentericus* has probably increased and the original cause of the epidemic, if found, would probably turn out to be either a healthy carrier of the disease or a mild unrecognized case of dysentery. Flies were not very numerous in the affected houses.

P. H. M-B.

CAVAILLON & WIBAUX. **La lutte contre la dysenterie bacillaire; étude d'une épidémie dans le département de l'Aisne en 1921.**—*Rev. d'Hygiene.* 1922. Sept. Vol. 44. No. 9. pp. 800–825. With 5 charts.

During the war the departments of France occupied by the enemy, especially that of the Aisne, suffered severely from outbreaks of bacillary dysentery.

A limited outbreak again occurred in April, 1921, in the canton of Rozoy-sur-Serre. Four persons in the same family were simultaneously attacked and three died. The symptoms were those of severe typhoid,

but Shiga's bacillus was proved to be the cause. In July, another outbreak occurred, in the canton of Coucy-le-Château, at some distance from the first. Altogether 98 cases occurred, with 11 deaths.

In a similar epidemic in another district of the department 82 cases were notified with 13 deaths (mortality 12·85 per cent.), the comparatively high death rate being attributed to the difficulty in procuring medical assistance in the devastated areas. Smaller epidemics occurred in other villages during the same autumn in scattered foci, the extension of which was checked by the adoption of vigorous measures; a total of 250 cases with 40 deaths was recorded; at Villers-les-Guise the death-rate was exceptionally high i.e., 40 per cent. in a limited series of 10 cases.

In this epidemic there appear to have been two waves of incidence, the first culminating about the 10 August, the second two months later.

In its clinical manifestations there was little of note; in elderly patients signs of the disease were slight, although they eventually succumbed to cachexia; in children it took the form of an infantile diarrhoea, which, but for the epidemic, would not have been suspected as dysenteric in origin; nevertheless typical Shiga bacilli were recovered from the motions. The death-rate in children and nurslings was high; in fact the death roll (16 per cent.) was mainly composed of those at the two extremes of life. The mortality is compared with the Toulon epidemic of 1906 (about 3 per cent.) and the Breton epidemic of 1896 (20–50 per cent.). As regards the etiology, evidence was forthcoming as to great contagiousness. Healthy persons visiting an infected house often contracted the disease and constituted a fresh focus of infection. At the same time telluric conditions were favourable to the spread of the epidemic. The insanitary conditions of the villages on the Aisne, as a result of the war, were undoubtedly responsible; the main defect being the dearth of "water-closets." In lieu of these latrine trenches had been constructed and it is said that many were situated in unpleasant proximity to the wells from which the water supply was drawn. In some of the localities dysentery hospitals had been situated.

As regards its bacteriology Endo's medium was employed and suspicious colonies were tested immediately, by the microscopic method, with anti-Shiga and anti-Flexner serums. In every case, save one where the Flexner bacillus was obtained, Shiga's bacillus was the responsible organism.

Sero-diagnosis proved disappointing—the reaction appeared later, i.e., after the eighth day and was absent in fulminating cases and in those who died before the fourth day. In a great number of cases it remained negative throughout, even in a dilution of 1 : 30.

Direct microscopic examination of the stool proved of great use in rapid diagnosis. Stress is laid upon the "leucocytorrhoea" and it is said that from specimens containing a high proportion of leucocytes dysentery bacilli were invariably isolated.

It is hardly necessary to detail the sanitary measures improvised: they were mainly concerned with the control of the water supply and the isolation of patients. Special attention was paid to the schools; sufferers from dysentery were not permitted to return to school for a month, while their mothers and sisters were excluded for three weeks. Strict supervision of water closets and lavatory arrangements was instituted. In the authors' opinion although serotherapy was rather tardily adopted the results obtained were excellent.

Preventive inoculation was practised to a limited extent. The ethero-vaccine of Vincent was employed; at first it was a polyvalent and latterly pure anti-Shiga. Serum injections were also used as a preventive but with what success was not ascertained.

P. H. M-B.

LICHTENSTEIN (A.). **Over chronische bacillaire dysenterie.** [Chronic Bacillary Dysentery.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1922. Vol. 62. No. 5. pp. 571–588.

Lichtenstein describes his experience in 50 cases of bacillary dysentery (5 Shiga-Kruse, 45 of the atoxic type) at Weltevreden (Java). In several of his cases abdominal complaints had existed before and the author assumes that he was in such cases dealing with relapses of a chronic bacillary dysentery. The infection did not interfere with the general state of health of the patients. As the bacillus usually has been found in one attack only and the interval between the acute attacks is often a remarkably long one the evidence of this thesis does not seem particularly strong. Agglutination is not of much importance for support of the diagnosis; only 1 : 200 or more is considered conclusive. Serum treatment does not seem necessary as a rule; most patients did well with a laxative followed by astringents, etc. Administration of an auto-vaccine gave very doubtful results. In wartime the chances of relapse in the many healthy carriers (which the author believes to exist) as well as the increased opportunity of spread of the disease, make vaccination of the troops with Boencke's Dysbacta urgent.

[The reviewer, who saw a serious epidemic of bacillary dysentery (of the atoxic type) in 1918–1919—about 250 cases among a Javanese coolie population of 9,000—met with very few cases in the same population in the following years and among those none had suffered from bacillary dysentery during the epidemic. The number of chronic cases as a result of the epidemic cannot have been of much importance.]

W. J. Bais.

LINS (Abdon Eloy Estellita). **Sobre os agentes da dysenteria bacillar do Rio de Janeiro.** [Bacillary Dysentery in Rio de Janeiro.]—*Arch. Brasileiros de Med.* 1923. Jan. Vol. 13. No. 1. pp. 5–44. With 2 plates.

Dysentery has increased considerably of late in Rio de Janeiro. In 1921 there were 247 deaths recorded, 33 as amoebic, 42 bacillary, and 172 of "unknown cause." In the first nine months of 1922 there were 35 deaths from amoebic, 53 from bacillary, and 248 undetermined. Of 564 examinations carried out on dysenteric stools in the laboratory during the same 21 months there were two in which amoebae were found, 134 in which the usual dysenteric bacilli (Shiga, Flexner, Hiss-Russell, and Strong) were isolated, the remaining 428 being undiagnosed.

The author carried out tests on 50 cases. Bacilli of the Shiga type were isolated in one only, of the Flexner type in two, "pseudo-dysenteric bacilli of the Morgan type" in two, *B. coli* alone in 31, while in the remaining 14 he obtained an organism which resembled *B. coli* in certain particulars, but was sufficiently distinct serologically to merit special mention. This is designated *Escherichia braziliensis* and has the following characters: It is motile and possesses six to ten peritrichial flagella; it causes turbidity and a thick deposit in

nutrient broth; clots milk; ferments lactose, glucose, saccharose, and sometimes mannitol and maltose; is pathogenic to guinea-pigs and rabbits, setting up diarrhoea and oedema of the colon; is not agglutinated by any of the common coli-typhoid group of sera, but an homologous serum agglutinates in dilutions of 1 : 3,000, and even in some cases 1 : 7,000.

H. Harold Scott.

PATTERSON (S. W.) & WILLIAMS (F. E.). **Observations on Dysentery Bacilli of the Sonne Type.**—*Med. Jl. Australia.* 1922. Nov. 25. 9th Year. Vol. 2. No. 22. pp. 608–610. With 3 text figs.

During the summer 1920–21 the authors isolated a type of dysentery bacillus which proved, on further investigation, to conform to the bacillus isolated by SONNE (Type III., THJØTTA). On MacConkey plates the bacillus appears as small, rounded, translucent colonies closely resembling those of *B. dysenteriae* (Flexner), but after further incubation they became more opaque, larger, with irregular outline. In lactose broth, with ANDRADE's indicator, formation of acid is shown about the ninth to twelfth day of incubation. The bacilli are agglutinated by Flexner-Y serum in low dilution and are pathogenic to rabbits, causing death within 36 hours. These animals can be immunized against this bacillus, the serum produced being remarkably specific. The organism is also pathogenic to guinea-pigs.

The original patient from whom the Sonne bacillus was obtained suffered from carcinoma of the pylorus; the second had had numerous relapses of amoebic dysentery during the war; the third suffered from attacks of acute colitis. It was also obtained from three babies with ileocolitis.

The serum of the third case did not agglutinate the bacillus five months after the onset of the disease and four months after recovery.

Agglutination tests were carried out with the serums of 128 patients, 37 of which gave an agglutination titre above 1 : 80, and of these 13 had a history of diarrhoea. Of 91 patients whose serum agglutinated the bacillus in a dilution below 1 : 80, six only had muco-pus in the stools. Eight typhoid sera agglutinated at less than 1 : 50.

They are of the opinion that diagnosis at the present moment can only be made by actual isolation of the bacillus.

P. H. M-B.

STUTZER (M. J.). **Eine neue Art des Paradysenteriestäbchens.**—*Cent. f. Bakt.* 1. Abt. Orig. 1923. Feb. 15. Vol. 90. No. 1. pp. 12–17. With 1 text fig.

Apparently the bacillus in question, *B. paradysenteriae* X, is identical with that described by SCHMITZ. It was isolated from an outbreak in East Prussia early in 1917.

P. H. M-B.

GARDNER (A. D.). **Standard Agglutinable Cultures of the Dysentery (Flexner Group) Bacilli.** [Correspondence.]—*Lancet.* 1922. Dec. 30. p. 1405.

When the first standard agglutinable cultures were issued in 1916 from Oxford for the Medical Research Council, only one type was made (*B. dysenteriae,* Flexner—now known as V): for this particular culture the limits of normal agglutination were 10 standard

units for males and 20 for females. At a later date the number of Flexner-type standard agglutinable cultures was increased to five (V, W, X, Y, Z).

In the early part of 1922 tests with sera of 120 healthy persons were performed, and it was found that with two of the type cultures a certain proportion of normal, particularly female, sera showed agglutinins in excess of the units laid down, so that readjustment was necessary in the case of W and Y.

All subsequent suspensions of the types have been standardized upon this improved basis.

P. H. M-B.

ACTON (Hugh W.), CHOPRA (R. N.) & BOYD (T. C.). **The Reduction of Amino-Acids into Simpler Natural Bases (Amines) by the** *B. dysentericae* **(Shiga).**—*Indian Jl. Med. Res.* 1923. Jan. Vol. 10. No. 3. pp. 837–846. With 5 figs.

An acute attack of bacillary dysentery (Shiga) occurring during pregnancy causes miscarriage. Experiments undertaken to isolate the substances causing contraction of the uterus, showed that Shiga's bacillus, in a culture rich in amino-acids (in this case veal broth), forms a substance which contracts the isolated uterus of a guinea-pig; Flexner bacilli produce no such substance. The body produced by Shiga's bacillus is thermostable, dialysable, not neutralized by polyvalent anti-dysenteric serum, but is precipitated by phosphotungstic acid. It is active in acid, but inert in alkaline solutions, soluble in water, but not in chloroform or benzene.

It probably belongs to the class of non-volatile amines. The variations in the amount of amine produced by Shiga's bacillus when acting on different media suggests that the same differences may occur in the human body and so account for the symptoms of collapse and fall of blood pressure in some instances.

P. H. M-B.

DUMAS (G.) & COMBIESCO (D.). **L'intoxication dysentérique du lapin et l'intoxication cholérique du cobaye par ingestion de toxines dysentérique et cholérique solubles.**—*C.R. Acad. Sci.* 1922. Oct. 16. Vol. 175. No. 16. pp. 652–654.

The intravenous injection to rabbits of 1 to 2 cc. of culture of Shiga's bacillus in saline or in broth causes paralysis of the extremities generally without supervention of intestinal symptoms. At autopsy oedema of the caecum is present without any ulceration of the mucosa. It is difficult or almost impossible to reproduce the lesions and characteristics symptoms of bacillary dysentery as usually observed in the disease in man. The authors attempted to do so by the administration *per os* of dense emulsions of Shiga's bacillus together with sulphate of soda, podophyllin or croton oil.

On the other hand it is easy to reproduce dysenteric intoxication in the rabbit by making the animal absorb the filtrate of a bouillon culture of Shiga's bacillus kept at 37° C. for eight days. The liquid should be introduced by means of a 10 cc. pipette, care being taken not to injure the mucosa in any way. Thirty-four hours afterwards the animal becomes feeble with paresis of the extremities. The caecum at autopsy is found to be thickened and oedematous. The mucous membrane is not scarred or ulcerated, though submucous haemorrhages are visible.

Following the technique of METCHNIKOFF, ROUX and SALIMBENI, they also attempted to reproduce in guinea-pigs choleraic intoxication. The filtrate of a 2 per cent. peptone culture of the vibrio, kept for four days at 37° C. and filtered through Chamberland bougie L3, when injected subcutaneously in 0·25 cc. doses into guinea-pigs causes death in 24 hours.

P. H. M-B.

FUKUHARA (Y.). **Beitrag zur Wertbestimmung des anti-toxischen Dysenterieserums.**—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1. Teil. Orig. 1923. Vol. 35. No. 5/6. pp. 482–487.

For testing dysentery toxins and for the evaluation of dysentery serums mice are the most suitable animals; their susceptibility to dysentery toxin, in proportion to body-weight, is one hundred times less than the rabbit's.

By utilizing the author's standard serum one can also test the dysentery serum for the number of anti-toxin units it contains. According to Japanese experience 20 anti-toxin units concentrated in 1 cc. anti-dysenteric serum should be regarded as the minimum standard amount.

P. H. M-B.

DOPTER (Ch.), DUMAS (J.) & COMBIESCO. **Sur la nature de la toxine dysentérique.**—*C. R. Soc. Biol.* 1922. Dec. 2. Vol. 87. No. 36. pp. 1140–1141.

OLITSKY and KLIGLER claimed that Shiga's bacillus produces two toxins—an endotoxin and an exotoxin [see this *Bulletin*, Vol. 16, p. 18]. It was asserted by them that when grown in a bouillon-egg medium with free access of air there is given off (*a*) an endotoxin which is thermolabile and is destroyed at 75° C., and (*b*) an exotoxin which appears only after long incubation (*i.e.*, 25 days); it is thermostable. In repeating these experiments the authors used the same mediums and incubated for five days; the filtrate produced in rabbits nerve paralysis without intestinal symptoms, but when they died oedema of the intestinal mucosa was found to be present. Other rabbits were injected, either with liquid dysentery toxins (according to KOLLE's method) or with dead or living organisms, and identically the same clinical and pathological state was produced in these animals. In face of the ascertained facts it seems difficult, they think, to postulate the existence of two distinct dysenteric toxins.

P. H. M-B.

BROWN (H. C.). **The Use of Rhubarb in Acute Bacillary Dysentery.**—*Lancet.* 1923. Feb. 24. p. 382.

This research was instigated by the communication of BURKITT [see this *Bulletin*, Vol. 19, p. 41]. A watery solution of the purgative constituents of rhubarb was used in the strength of 1 gm. rhubarb extract to 3 cc.; 5 cc. of the solution was implanted with 0·2 cc. of a filtered 24-hour broth culture of dysentery bacilli. After permitting the solution to act upon the organisms at room temperature up to two hours, a platinum loopful was planted into 10 cc. nutrient broth. No inhibition of growth occurred.

On the surmise that the therapeutic action of rhubarb might be dependent on its cholagogic properties, 10 per cent. solution of taurocholate of soda or sterile ox-bile was used without in any way altering the result.

It therefore appears that neither extract of rhubarb nor undiluted ox-bile has any distinct germicidal action upon dysentery bacilli under the conditions employed.

P. H. M-B.

DERNBY (K. G.) & NÄSLUND (Carl). **Die Beziehung der Wachstumskurven einiger Mikro-organismen der Dysenterie-Coli-Gruppe zur Wasserstoffionenkonzentration.** [Relation of the Growth Curves of Organisms of the Dysentery-Coli Group to the H-ion Concentration.]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1. Teil. Orig. 1923. Vol. 35. No. 5/6. pp. 450–454.

A number of organisms of the typhoid, coli and dysentery groups were studied for the optimum conditions of growth. In reaction the optimum appears to be in the region of neutrality; media should therefore have an initial water-concentration of P_H 7 to P_H 7·5. Should the medium not contain sugar the reaction should be 7; if it does, it should be higher, P_H 7·5–8·0.

P. H. M-B.

MIXED AND UNCLASSED DYSENTERY.

FEDERATED MALAY STATES. **Annual Report of the Institute for Medical Research for the Year 1921.** [FLETCHER (William), Acting Director.]—13 pp. [Dysentery. pp. 6–9.]

One thousand and fifty-three cases from the dysentery wards of the District Hospital were examined; of these 240 died, a mortality of 22·79 per cent. Bacillary dysentery proved more common than amoebic. Dysentery bacilli were isolated in 473 cases (44·9 per cent.) while *E. histolytica* was found in 167 (15·86 per cent.); Shiga's bacillus was only found in 27 cases, whereas 446 were due to the Flexner organisms. The case mortality-rate in this series was 27·68 per cent.

Anti-dysenteric serum preserved in cold storage and sent out monthly from the Lister Institute was administered in doses of 40–160 cc. to 212 patients; of these 27·7 per cent. died, whereas in the control series of 261 cases without serum the mortality was 27·6 per cent. The apparent lack of response to serum treatment is ascribed to the enfeebled condition of many of the patients; it is otherwise in the case of people of a more vigorous constitution. The cachectic condition of many of the Tamil coolies is ascribed to the prevailing economic conditions and the slump in rubber and tea.

The dysentery bacilli isolated from these cases could be classified as belonging to one or other of ANDREWES' five races.

Malaria being the almost universal complication of dysentery amongst vagrant coolies, every dysentery patient was given 20 gr. quinine daily.

Prevention of bacillary dysentery is best obtained by sanitary measures and by early treatment, since prophylactic inoculation, especially against Flexner dysentery, is of doubtful value.

In an epidemic killed cultures of Shiga bacilli were administered by the mouth, as recommended by BESREDKA. Of 31 contacts who

received it 4 contracted the disease subsequently, but none died. In the unprotected there were 69 cases, with 17 deaths.

Epidemics are probably spread by personal contacts or indirectly by food, fingers and flies.

One hundred and sixty-seven patients suffered from acute amoebic dysentery; of these 18 per cent. died. In most death was not due to dysentery, but to some other disease. The experience of the earlier months of 1921 seemed to indicate that emetine was not active in amoebic dysentery, but in July the preparations of emetine were made up in the laboratory and the results subsequently were uniformly good. At the post-mortem examinations made on patients in this group, who had died from other diseases while undergoing a course of emetine injections, the healing of amoebic ulcers was found to be taking place "with almost magical rapidity."

A number of experiments were made with the object of ascertaining the persistence of dysentery bacilli in the faeces. Samples of excreta from acute dysentery were divided into two portions, one of which had been mixed with Teague and Clurman's solution; these samples were kept at laboratory temperature (80° F.) and plated out daily. Shiga bacilli were isolated as late as the 16th day from a specimen of the mixture, and not later than the 4th from an unmixed sample. Specimens were sent from a village at some considerable distance from the laboratory and Shiga's bacillus isolated when the specimens were six, seven and eight days old.

P. H. M-B.

LITTLE (E. Marjory). **Dysentery: Bacillary and Amoebic.**—*Med. Jl. Australia.* 1923. Jan. 6. 10th Year. Vol. 1. No. 1. pp. 1–5. With 4 text figs.

The faeces of all cases of gastro-enteritis in the Royal Alexandra Hospital for Children, Sydney, were examined for evidences of dysentery. They could be divided into two groups.

Group I. Cases beginning suddenly with frequent motions, mucus and blood, and other characteristic features. From 29 of these cases the Flexner bacillus was recovered, and from 5 Shiga's bacillus.

Group II. Infants whose health had never been good and in whom diarrhoea had been more or less persistent. No dysentery-like organisms were ever recovered from the stools.

P. H. M-B.

BEYNEN (G. J. W. Koolemans). **Chronische diarrhoeën bij uit Indië gerepatrieerden.**—*Tijdschr. v. Vergelijk. Geneesk., enz.* Leiden. 1922. Nov. 25. Vol. 8. Nos. 2/3. pp. 102–118. [English summary pp. 118–119.]

The chief bowel diseases in patients invalided home from the East Indies are amoebic dysentery and sprue; bacillary dysentery is, owing to its more acute nature, less often seen. The diagnosis of the first disease is of course very easy if all stools are microscopically examined, for it is then found that very slight diarrhoea may be caused by the *Entamoeba histolytica*. The treatment of these cases, being resistant to emetine, is difficult, but the Yatren treatment of MÜHLENS has been found to be most efficient. The diagnosis of tropical sprue is a much more difficult matter, especially at the onset of the disease; the most valuable symptom for diagnosis is the appearance of large quantities of fatty acid crystals in the faeces.

P. H. M-B.

WHITTINGHAM (H. E.). **Observations on the Pathogenicity and Treatment of Flagellate Dysentery.**—*Jl. State Med.* 1923. Mar. Vol. 31. No. 3. pp. 126–135.

The symptoms emphasized in the condition known as flagellosis are recurrent attacks of diarrhoea, passage of mucus and perhaps blood, thickening and tenderness of certain areas of the bowel, a slight leucocytosis, and neurasthenia ; moreover, in Lamblia infections the stools were often distinctive—pultaceous, pale, and of a characteristic odour. No one can say that recurrent diarrhoea is a normal condition in man, nor are such flagellates as *Lamblia intestinalis*, *Trichomonas hominis* and *Chilomastix mesnili* normal inhabitants of the bowel. The suspicion of their pathogencity is strengthened by the frequent passage of mucus containing them in large numbers. Many cases of pure flagellosis show a relative and absolute increase of large lymphocytes in the blood, and most cases eosinophilia (5 to 8 per cent.), which disappeared with the flagellates. The occurrence of jaundice in one case of pure Trichomonas infection points to a higher *habitat* in the intestine than is commonly suspected. Independently of macroscopic lesions, chronic irritation of the mucosa is liable to lead to neurasthenia.

As regards treatment, bicarbonate of soda is given three times daily in 15-gr. doses for three days, the idea being to remove mucus coating the gut. Then, further to clear the road for the action of specific drugs, a 3-gr. dose of calomel, followed next morning by two drachms of magnesium sulphate. Afterwards thymol, in three 30-gr. doses in cachets, followed by an emetine-bismuthous-iodide course of 33 gr. and high lavage of the colon on alternate mornings with sulphate of quinine solution (10 to 20 gr. to the pint). After the course the faeces were examined for at least three weeks, the patient being discharged from hospital on a tonic pill.

Adopting this routine, at least 50 per cent. of Lamblia infections have been cleared up and all the Trichomonas cases except one have recovered.

P. H. M-B.

MARCUCCI DELGADO (A.). **El Método Escomel en la tricomonosis infantil.** [The Escomel Treatment of Trichomonas Infection in Children.]—*Gac. Méd. de Caracas.* 1922. Mar. 15. Vol. 29. No. 5. pp. 65–66.

This treatment consists in the administration of essence of turpentine to children harbouring the *Trichomonas hominis*. Two cases are recorded. The first, a child of six years, suffered from diarrhoea (10–12 copious, yellowish, liquid motions daily), with oedema of the face, scrotum and legs. There was no pain, fever, or tenesmus. Examinations of the faeces revealed Trichomonas in large numbers, together with ova of Ascaris and cysts of *Entamoeba coli*. After ten days' treatment the first-named could not be found, though the others remained. The oedema disappeared. In the second case, a boy of five years, no material improvement resulted. The drug is better tolerated by children than by adults, in whom it produces nausea, headache, deafness, and pains in the ears.

The author states dogmatically that *Trichomonas hominis* "is a proved causal agent of diarrhoea and dysentery."

H. Harold Scott.

FORRAI (Elemér). **Balantidien-Colitis.**—*Cent. f. Bakt.* 1. Abt. Orig. 1922. Dec. 21. Vol. 89. No. 6. pp. 186–191. With 3 text figs.

In November, 1921, a case considered upon clinical grounds to be one of enteric fever plus acute nephritis came to autopsy at Budapest, when acute endocarditis, sepsis, parenchymatous degeneration of the kidneys and ulcerative colitis due to *Balantidium coli* were found.

The subject, a peasant woman, had been ill for two weeks, commencing with a rigor; there was no history of previous dysentery or diarrhoea. The clinical picture and the temperature chart suggested a septic fever with considerable mental derangement. The ulceration was most abundant in the caecum; the sigmoid flexure was normal.

The parasites were easily demonstrated in haematoxylin-stained sections in necrotic foci in the submucosa, which had also in places undergone hyaline degeneration; in the mucosa they were rare in the vicinity of the muscularis mucosae, which they were seen to penetrate. The parasites had one or two vacuoles and often contained ingested red blood corpuscles, and sometimes they occurred in long chains.

The author thinks that, in this instance, the Balantidia were pathogenic and the cause of the ulceration. He states also that so far there have been described about 200 human cases of balantidial colitis.

P. H. M-B.

TANAKA (Toshiwo). [**Preliminary Reports on the Reason of the Development of Cerebral Symptoms in Severe Infantile Dysentery and Ekiri.**] —*Iji Shimbun* (*Med. News*). 1922. Sept. No. 1102. [Summarized in *Japan Med. World.* Tokyo. 1922. Dec. 15. Vol. 2. No. 12. p. 348.]

Symptoms of encephalitis develop in severe forms of infantile dysentery. Should the encephalitis be severe, it generally follows that the bowel symptoms are also.

P. H. M-B.

BRUCHANSKY (B.). **Zur Aetiologie der Kinderruhr.**—*Rev. Microbiol. & Epidemiol.* Saratov 1922 Vol. 1. No. 3. pp. 293–294.

McKINLEY (Earl B.). **Notes on d'Herelle's Phenomenon. Adaptation of Bacteriophage Antagonistic to** *Bacillus Dysenteriae* **and other Bacilli to Various Cocci. Development of a Polyvalent Bacteriolysant. (Preliminary Report).** —*Jl. Lab. & Clin. Med.* 1923. Feb. Vol. 8. No. 5. pp. 311–317.

NICOLLE (Charles) & CONSEIL (E.). **Vaccinations préventives par voie digestive chez l'homme dans la dysenterie bacillaire et la fièvre méditerranéenne.**— —*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. Vol. 3. No. 1. pp. 67–70. [Already summarized from *Annales de l'Institut Pasteur.* See this *Bulletin.* Vol. 20. p. 115.]

ORTICONI (A.) & GAZZOLA (M.). **Entérite dysentériforme par** *Amoeba coli.*— *Presse Méd.* 1922. Dec. 6. Vol. 30. No. 97. pp. 1052–1053.

SPRUE.

POWELL (Arthur). **House Incidence of Sprue suggesting its Infective Nature.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1922. June 22. Vol. 16. No. 3. pp. 125–130. (Discussion pp. 130–134.)

The peculiar geographical distribution of sprue is suggestive, and its infectious possibility is strengthened by the occurrence of cases in closely associated individuals.

In the Bombay City Police the disease appears to have been prevalent, but only among the higher ranks (six cases); not among non-commissioned officers and the native staff, at any rate in the period under review.

Other groups of cases are cited: In group B were 4 cases in the same house; in group C, 16 cases occurring in various bedrooms of a residential club; in group D, 2 cases, partners in the same firm; in group E, 3 cases in men occupying the same office; in groups F and G, partners in the same firm; in group H, 3, and in group J, 2 brothers.

In the discussion which followed, other similar instances were adduced, and it was thought improbable that sprue is, in the true sense, infectious, but that these closely associated individuals had all been exposed to the same environment.

P. H. M-B.

ROGERS (J. M.). **Isolation of *Monilia psilosis* in Tropical Sprue (Psilosis). Report of Case that originated in Korea.**—*Jl. Amer. Med. Assoc.* 1922. Nov. 11. Vol. 79. No. 20. pp. 1677–1678.

The patient from whom the yeast culture was isolated contracted the disease in Korea in October 1917; in February 1922 an organism giving the reactions of *Monilia psilosis* and identified as such by ASHFORD was isolated from the faeces. A vaccine made from this organism, and injected into the patient, caused a marked local and systemic reaction, while a control in a normal person produced no effects whatsoever.

A similar organism was obtained from the stools of the writer, which he attributes to living for four years in the endemic area in a house in which five cases of sprue had developed within the last six years. The stools of 14 patients suffering from chronic diarrhoea in North Carolina were systematically examined for *M. psilosis* without success.

P. H. M-B.

ELDERS (C.). **Over den vorm, het beloop en de prognose van de anaemie bij Indische spruw en over de aetiologie der pernicieuse anaemie.** [The Type, Course, and Prognosis of the Anaemia in Sprue and on the Aetiology of Pernicious Anaemia.]—*Nederl. Tijdschr. v. Geneesk.* 1922. Vol. 66. Pt. 2. No. 21. pp. 2267–2276.

Elders, whose views about sprue being a deficiency disease have been referred to before [this *Bulletin*, Vol. 14, p. 121 and Vol. 17, p. 184], points out that the blood picture in sprue shows remarkable resemblance to that of pernicious anaemia (anisocytosis, normoblasts and megaloblasts, increased haemoglobin index). On the other hand cases of pernicious anaemia may show symptoms suggestive of sprue (typical tongue, diarrhoea).

Autointoxication as an exclusive aetiologic factor of this disease is not sufficient to explain some features of pernicious anaemia (its frequent appearance during pregnancy or lactation, the large and increasing quantities of toxic substances required to produce it experimentally). A certain "weakness of constitution" must be assumed to exist besides the intoxication, if the latter exists at all. Elders considers this weak constitution to be a deficiency of the diet, especially in amino-acids, as he has suggested for sprue. He proposes the same dietary treatment, in which fresh meat forms an important part.

W. J. Bais.

SOLANO RAMOS (F.). **Otra teoría mas sobre la etiologia y patogenia del sprue.**—*Asclepios.* Habana. 1921. Sept.–Dec. Vol. 10. Nos. 9–12. pp. 175–183.

MEDICAL ZOOLOGY.

GIGLIOLI (G.). *Armillifer Brumpti* **n. sp., nouvelle espèce de Linguatulidé de Madagascar.**—*Bull. Soc. Path. Exot.* 1922. July 12. Vol. 15. No. 7. pp. 565–572. With 2 text figs.

A full description, with figures, of the male and not quite mature female of this new species, the adults being parasites of an unidentified snake, and the larval forms in the liver and lung of a tanrec. It is the first species of Linguatulid recorded from Madagascar.

A. A.

NOC & NOGUE. **Note sur un cas de porocéphalose.**—*Bull. Soc. Méd.-Chirurg. française de l'Ouest-Africain.* 1919. Dec. Vol. 1. No. 5. pp. 6–9.

Case of a sepoy from the Ivory Coast. Twelve days after admission (for ulcerating syphilides) he became fevered, the fever being of an enteric type, and the abdomen tender to palpation. At one time there was difficulty in swallowing. After the fever abated he remained in a wasted condition, stupid, with an uncertain gait like a drunken man, so that an examination was made for trypanosomes. About seven months after admission he died in a cachetic state and wasted to a skeleton, having passed the last three months of his life like a beast.

At the autopsy from 150 to 200 encysted larvae of Porocephalus were found—distributed in the parietal and visceral peritoneum, liver, and upper lobe of the right lung, but not elsewhere.

Subsequent inquiries elicited the information that the natives of certain villages of the Ivory Coast are accustomed to eat pythons' flesh.

NOC & NOGUE. **Un nouveau cas de porocéphalose humaine.**—*Bull. Soc. Méd.-Chirurg. française de l'Ouest-Africain.* 1920. Dec. Vol. 2. No. 10. pp. 284–286.

The patient, a sepoy from the southern Sudan, died after being in hospital for three weeks with symptoms of a chronic nephritis of undetermined aetiology. At the autopsy the peritoneal cavity was full of ascitic fluid, and both kidneys were enlarged and in an advanced stage of fibrosis ; 20 larvae of Porocephalus were encysted in the liver, 15 in the peritoneum, and 2 in each lung ; but none was found in any of the other organs ; the duodenum contained 15 ankylostomes (*Necator americanus*). Subsequent inquiry brought out the interesting information that the patients' fellow-countrymen feed on the flesh of the python, and often eat the reptile's fat as a charm.

Although larvae were not found in the kidneys, the authors are inclined to think that there is a relation of cause and effect between the porocephaliasis and the chronic nephritis. For one thing, they actually observed, on another occasion, an encysted larva, which had been removed from a cyst, travel through a piece of kidney-tissue in the course of 24 hours, without making a lodgement.

A. A.

Noc (F.). **Infestation massive naturelle de la Genette du Sénégal par des larves de Porocéphales.**—*Bull. Soc. Path. Exot.* 1922. July 12. Vol. 15. No. 7. pp. 621–631. With 3 plates.

The subject of this massive infection was a genet or civet, *Genetta pardina*, very common in the neighbourhood of Dakar. The

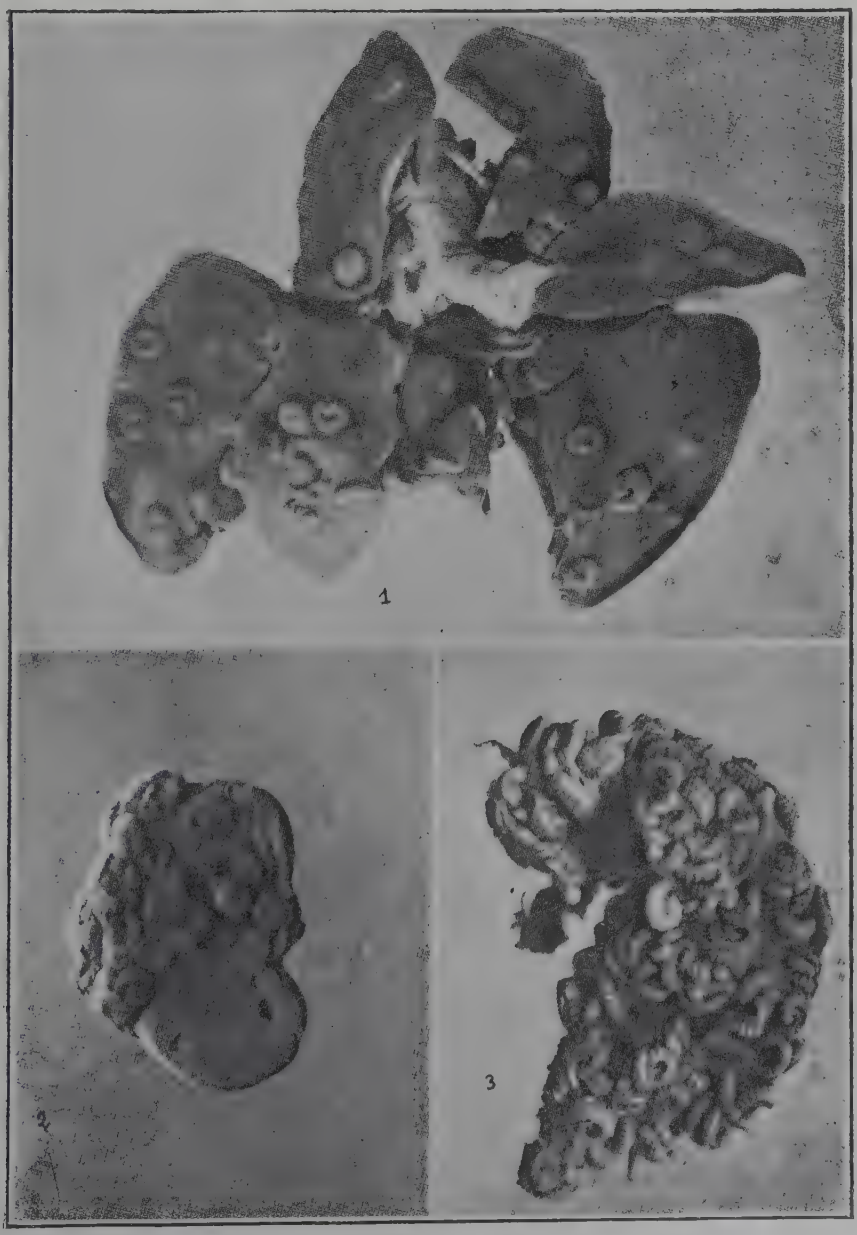


Fig. 1. Lungs of genet with encysted larvae of Porocephalus.
,, 2. Larvae in capsule of the kidney.
,, 3. Mass of larvae in the peritoneum.
[Reproduced from the *Bulletin de la Société de Pathologie Exotique.*]

peritoneum everywhere, and the viscera, were profusely encrusted with encysted larvae of Porocephalus, as were also, to a less extent, the lungs (see figs.). The sexes of the larvae could be distinguished.

A list of the intermediary hosts of *Porocephalus armillatus* is appended. It includes man, chimpanzee, eleven species of monkeys, a lemur, lion, leopard and two other species of cats, domestic dog, four species of civets, aard-wolf, hedgehog, rat, guinea-pig, Cricetomys, pig and wild pig, river-hog, wart-hog, reed-buck, giraffe, and two species of antelopes.

A useful list of references is appended also.

A. A.

NOC (Fernand) & GIGLIOLI (George S.). **Linguatulids Parasitic in Monitors. The New Genus** *Sambonia.*—*Jl. Trop. Med. & Hyg.* 1922. Sept. 1. Vol. 25. No. 17. pp. 276–280. With 4 text figs.

The linguatulid of the Egyptian monitor lizard (*Varanus niloticus*) described by LOHEMANN, in 1889, as *Pentastomum clavatum* and after some taxonomic agitation at last brought to rest in SAMBON's genus *Sebekia* with the specific name *lohrmanni*, is now shown to be again in improper company. Its position among Sebekines is not indeed objectionable, but by its imbricating annuli, its non-serrated mouth-hooks encased in chitinous sheaths, its oviduct opening on the third antepenultimate segment, and its richly spinulose egg-shell, it possesses a sum of distinctive characters that entitle it to separate generic recognition from Sebekia. The authors, therefore, institute for its reception the new genus *Sambonia.*

A. A.

ANNANDALE (N.). **Notes on the Genera Bullinus and Physa in the Mediterranean Basin** (*Mollusca pulmonata*).—*Indian Jl. Med. Res.* 1922. Oct. Vol. 10. No. 2. pp. 482–491. With 4 figs.

On the assumption that all or nearly all the many separately named forms that may be regarded as synonymous with *Bullinus truncatus* are capable of spreading *Schistosoma haematobium*, and that no species of Physa has that capability, the author here summarizes the difference between the Bullinus and two species of Physa that might be confused with it in the field. The soft parts exhibit much greater differences than the shell. The Bullinus also, being a Planorbid, has the characteristic red blood of the family.

A. A.

WALKER (F. D.). **Fish Poisoning in the Virgin Islands.**—*U.S. Nav. Med. Bull.* 1922. Aug. Vol. 17. No. 2. pp. 193–202. With 7 illustrations.

Every year cases of poisoning by fish occur in the Virgin Islands, generally in the months July–October, more rarely at other times. The symptoms are acutely gastro-intestinal, followed by weakness and itching; occasionally there is syncope; occasionally the resulting incapacity lasts for a month. The commoner species that have caused poisoning are (1) *Caranx latus* (yellow jack, horse-eyed jack), one of the Carangidae or horse-mackerels, which is particularly poisonous when caught in the deep sea and in summer, and when of large growth; (2) *Scomberomorus cavalla* (king-fish), one of the Scombridae or mackerel family, poisoning from which can hardly be due to a toxin, since when perfectly fresh it is considered to be the finest of all the local food-fishes; and (3) *Sphyraena barracuda* (fam. Sphyraenidae),

the nature of the poison of which is also a matter of dispute, since small-sized fish are generally considered wholesome, and salted fish of larger size have been eaten without ill effects. The theory [not confined to the West Indies] is that individual fishes become poisonous from poisonous food or feeding-grounds.

A. A.

ESSERTEAU. **Note sur un poisson vulnérant en l'Ile d'Hainan.**—*Bull. Méd. Franco-Chinois.* Pekin. 1920. July-Oct. Vol. 1. No. 1. p. 39.

The venomous fish in this case appears to have been a small Scorpaenid of the genus *Aploactis*. The patient, a European, was wounded in the sole. He almost fainted with the pain, which spread over the whole plantar surface. In about a quarter of an hour the foot became red and slightly oedematous, and then somewhat numb. In about an hour these symptoms began to pass off, but for about three days the sole remained sore.

A. A.

ARCHIVES DE MÉDECINE ET PHARMACIE NAVALES. 1922. July-Aug. Vol. 112. No. 4. p. 333.—**Deux accidents par piqûre de raie.**

Two cases of wounding by the caudal spine of sting-rays. One, a laceration of the hand, was followed by pain extending along the brachial plexus and neck, the wound itself being ecchymosed. The local pain was alleviated by incision and application of permanganate, but the pain along the nerves persisted for some days. The other, a deep wound of the foot, resembled a viper bite and was followed by hysterical symptoms, convulsions, and foaming at the mouth. Incision and injection of antivenomous serum soon gave relief, but vague pains along the course of the sciatic nerve continued for some days.

A. A.

STEWART (Douglas H.). **The Sting of the Sea-Nettle.**—*Boston Med. & Surg. Jl.* 1922. Aug. 31. Vol. 187. No. 9. pp. 337–339.

The author does not specify what is meant by "sea-nettle," whether a Medusa or a Portuguese man-o'-war. He has lately seen two cases of bathers stung by "sea-nettles"; one was slashed across the mouth and chin, and the resulting rash resembled a severe herpes febrilis; the other was slashed across the face and also across the shoulders and back, and the resulting rash was rather erysipelatoid.

A. A.

GIGLIOLI (George). **The New Genus** *Alofia* **of the Family** *Linguatulidae.* **An Anatomical Account of** *A. ginae.*—*Jl. Trop. Med. & Hyg.* 1922. Dec. 1. Vol. 25. No. 23. pp. 371–377. With 5 text figs.

GORDON (R. M.). **The Susceptibility of the Individual to the Bites of** *Stegomyia calopus.*—*Ann. Trop. Med. & Parasit.* 1922. Oct. 18. Vol. 16. No. 3. pp. 229–234. With 1 fig.

HOFFMANN (W. H.). **Sobre la presencia de "** *Rhodnius prolixus* **Stal" en Cuba y su importancia médica.**—Reprinted from *Sanidad y Benefic. Boletin Oficial.* 1922. May & June. Vol. 27. Nos. 5 & 6. 4 pp.

ROUBAUD (E.) & FRANCHINI (G.). **Culture des parasites leishmaniformes obtenues chez la souris par inoculation des fèces de la Puce** *Ctenopsylla musculi.*—*Bull. Soc. Path. Exot.* 1923. Jan. 10. Vol. 16. No. 1. pp. 14–15.

SAMBON (Louis Westenra). **A Synopsis of the Family** *Linguatulidae.*—*Jl. Trop. Med. & Hyg.* 1922. June 15. Vol. 25. No. 12. pp. 188–206. With 20 text figs.; and Dec. 15. No. 24. pp. 389–428. With 25 text figs.

MISCELLANEOUS.

BALFOUR (Margaret I.). **Maternity Conditions in India.**—*Lancet.* 1922. June 10. pp. 1161–1162.

Maternity conditions in India, according to Dr. Balfour, are as bad as they can be. She describes the hereditary dai, or midwife, whose knowledge is picked up from her predecessor, who passes, with filthy clothes and person, from case to case and, without more than a perfunctory hand-cleansing, makes a practice of vaginal examination, so that septic infection is rampant; the objection of the immense majority of Indian women to the male medical practitioner, together with the very small number of women doctors; the inefficient teaching of midwifery to native students of both sexes owing to want of material in the hospitals, and their consequent lack of knowledge and skill; the backward state of the training of midwives, and the absence of inspection of the work of those who have passed examinations, and of punishment for malpraxis. The Government of India gives an annual grant of £25,000 for a Women's Medical Service, and one of £14,000 for the medical college for women at Delhi, but these sums are far below what is required. The infantile mortality over the whole country is 270 per mille and in Bengal 70 per cent. of this takes place in the first month. Ophthalmia and tetanus of the newly born are common. The frequency of osteomalacia and eclampsia call for investigation. She considers that a medical woman should be appointed to assist the Commissioner for Public Health and advise on measures for improving the conditions of childbirth [see also this *Bulletin*, Vol. 13, p. 321, where a book on the same subject is reviewed].

A. G. B.

KEUKENSCHRIJVER (N. C.) & DOORENBOS (W. B.). **Eenige statistische gegevens naar aanleiding van een duizend bevallingen in de kraaminrichting van de Holland-Amerikaansche Plantagemaatschappij te Kisaran.** [Statistical Data concerning a Thousand Deliveries in the Maternity Hospital of the Dutch-American Plantation Company at Kisaran.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1921. Vol. 61. No. 5. pp. 488–499. With 1 text fig. & 1 chart.

Contains much information about pregnancy and childbirth in Javanese women, the most important features being the following. Labour is very easy as a rule; in only 0·4 per cent. was instrumental extraction necessary. Albuminuria is less common than in Europe (½ per cent.), as is also eclampsia (0·2 per cent.). No real placenta praevia was found among the authors' cases. Twins are rare (9·6 per cent.); in Europe more than twice as many. The blood pressure did not show any noticeable rise during pregnancy. The external measurements of the pelvis are less than in European women; the internal measurements, however, are the same owing to the finer bones of Javanese women.

The mortality from childbirth and the children's mortality were considerably decreased by hospital treatment of the maternity cases and regular control of the babies. Only in four cases was breast feeding not sufficient. For more details the original should be seen.

W. J. Bais.

HOOTON (A.). **Ether in the Tropics. A New Apparatus.**—*Indian Med. Gaz.* 1922. May. Vol. 57. No. 5. pp. 175–176. With 1 text fig.

The author notes that whereas ether has almost entirely superseded chloroform in British operating theatres, in India this is not the case. Chloroform is believed to be safer in a warm than in a temperate climate and the rapidity of evaporation of ether in India makes it expensive, as well as unpleasant for the anaesthetist. He finds that the ether purificatus of the B.P. can be replaced without risk by methylated ether and at a third of the cost; and he figures a closed apparatus designed by PINSON which in the 37 cases in which it has been tried in Rajkot has proved satisfactory, having all the advantages of open ether without some of its disadvantages. The apparatus may be obtained from the Condensed Gas Company, Ltd., 59, Grosvenor Street, Manchester, at about £6.

A. G. B.

ROSENBERGER (Georg). **Studien ueber die in- und extrazellulär liegenden Rickettsien.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1922. Apr. Vol. 26. No. 4. pp. 112–119.

Here is related the discovery, in the course of experimental typhus investigations, of a Rickettsia (identified as *R. rocha-limae*) of the louse distinct from the *R. prowazeki* supposed to be the agent of typhus fever. The differences between the two species are tabulated.

R. prowazeki is constant in form though variable in size; the organisms are regularly distributed over the field of the microscope; they stain very lightly with aniline dyes; they are intracellular, and though they fill the cell they are individually distinguishable; they are extremely toxic, so that if a fair amount of them is injected into the louse's gut the insect dies in a few hours; lice do not become infected by mutual contact or by contact with the infected faeces.

R. rocha-limae besides being very variable in size is very variable in form; the organisms are in clumps in the field, like agglutinated bacilli; they stain somewhat better; they are both extra- and intracellular and when intracellular they are in clumps and are not easily distinguishable individually; they are not at all toxic to the louse; lice may become infected by mutual contact or by contact with the infected faeces.

A. A.

BUTLER (E. J.). **Some Relations between Vegetable and Human Pathology.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1922. Jan. 19. Vol. 15. No. 7. pp. 203–211. (Discussion pp. 211–214.)

Dr. Butler, Director of the Imperial Bureau of Mycology, here shows that the problems which face the vegetable pathologist are in some instances akin to those of human pathology. An example is "virus" or "contagium" disease, in which the presence of a parasitic agent is suspected but none has been disclosed. The most important of several groups is the "mosaic" group from a form of which nearly every cultivated plant suffers. There is an incubation period which varies with the plant. "Carriers" are found, *i.e.* plants which show no symptoms, yet contain infective virus in a transmissible form. This group of diseases is insect-borne; aphids are chiefly responsible. In one instance "the insect has to be kept for a period of 24–48 hours

after feeding on a diseased plant before it can inoculate a healthy one, after which it can remain infective for 100 days." After extraction from the plant dried tobacco mosaic virus lives for a year or more. The sap may be diluted 1,000 times without loss of virulence. The geographical distribution of a considerable group of plant diseases is correlated with the temperature and humidity reactions of the parasite and its host, and the author compares recent observations on epidemic malaria in the Punjab, which is dependent on a narrow range of humidity and temperature. Interesting observations are described, relating to crown gall tumour in plants, which suggest analogies with cancer. Here a virus has been cultivated.

A. G. B.

SHARPE (W. Salisbury). **Care and Treatment of the Ear in the Tropics.** —*Jl. Trop. Med. & Hyg.* 1922. Feb. 15. Vol. 25. No. 4. pp. 37–41. With 2 text figs.

A didactic paper in which the author, an assistant surgeon at the Central London Throat, Nose and Ear Hospital, describes the rudiments of examination of the ear and names the conditions which debar from a tropical career. He submits that a test of the hearing power and inspection of the ears of a candidate for the tropics is at least as important as an eye examination. The title hardly conveys an idea of the contents.

A. G. B.

FERNANDO (Antonio S.). **Clinical Notes on Ear, Nose and Throat Cases in the Dispensary of the Philippine General Hospital.**—*Jl. Philippine Islands Med. Assoc.* 1922. May–June. Vol. 2. No. 3. pp. 125–129.

We have here the statistics of four years in the Free Dispensary of the Philippine General Hospital where a yearly average of 12,000 ear, nose and throat cases is treated.

Among 784 cases of ear diseases seen in 1921 the most common were suppurative otitis media and furunculosis (448 and 210) and catarrhal otitis media (69) ; mastoid complications are uncommon (19 in 1920). The frequency of furunculosis is attributed to picking the ear with a tooth pick or match.

Diseases of the nose (956 in 1921) are headed by rhinitis, chronic hypertrophic, chronic and atrophic (322, 195 and 124) ; nasal polypi numbered 77 ; ulceration and submucous infiltrations 49, many due to yaws, others to syphilis.

Of 1,173 cases of diseases of the throat chronic hypertrophic tonsilitis cases numbered 268, acute and chronic pharyngitis 234 and 190 ; other forms of tonsilitis were numerous. There were 71 cases of tubercular laryngitis. Only 14 cases of adenoids are noted.

A. G. B.

CASTELLANI (Aldo) & TAYLOR (Frank E.). **The Detection and Identification of Maltose, Galactose, Saccharose and Inulin, by a Mycological Method.**—*Jl. Trop. Med. & Hyg.* 1922. Feb. 15. Vol. 25. No. 4. pp. 41–46. With 1 text fig.

This method is based on the observation that germs are fastidious in the selection of the sugars of which they make use and [provided that their behaviour is constant] the fermentation of a sugar by one

organism and its non-fermentation by another, their biochemical reactions being otherwise the same, furnish the clue to the identification of the sugar. Numerous instances are given in which various species of Monilia were employed and the paper closes with a list of "mycological formulae."

A. G. B.

RODHAIN (J.). **Les Roussettes africaines comme animaux de laboratoire.**—*Bull. Soc. Path. Exot.* 1922. Apr. 12. Vol. 15. No. 4. pp. 212–215. With 1 text fig.

VAN DEN BRANDEN has suggested the use of the common African bat, *Cynonycteris straminea*, as a laboratory animal [see this *Bulletin*, Vol. 11, p. 235]. The author has kept this in captivity at Boma as well as two other species of fruit-eating bats of the genus *Epomophorus*. He here gives notes of their capture and maintenance in captivity. He has had a Cynonycteris for 18 months which travelled for three months in a cage on a man's back; it bred in captivity. The natives catch it in snares baited with fruit. The other species are smaller and can be caught in the daytime, when they hang in clusters in certain trees, with an insect net on a bamboo pole. Provided the bats can suspend themselves from the top small cages do well; they must be kept very clean and in the shade. Large quantities of papays, bananas and mangos must be provided.

A. G. B.

NAPIER (L. E.). **The Differential Blood Count.**—*Indian Med. Gaz.* 1922. May. Vol. 57. No. 5. pp. 176–179. With 1 fig.

This paper is not intended as an answer to the question "Have differential leucocyte counts any value?" proposed by STEPHENS and YORKE and their collaborators, since the author was considering that question before that paper was published, and came to the conclusion that the answer depends upon the manner of the count. He has compared counts made by different methods and finds that the most uniform results are obtained by making a very small film and counting every leucocyte in that film. Another method approved by him is "method D." I cannot find this method specifically described in the paper, but I infer from the context and the order of the figures that it consists in making a film, with a spreader having a slightly concave edge, exactly in two middle quarters of the slide, the film to have as few tails as possible; and counting the leucocytes in two complete lengths of it away from the longitudinal edge, not stopping at 500. By "method D" the percentages of large mononuclears and polymorphonuclears are slightly increased. Whatever method be adopted not less than 400 leucocytes should be counted.

The author has found the differential count one of the most useful indicatives of progress towards recovery in kala azar patients and towards a definite leishmania infection in experimental animals.

A. A.

DE LANGEN (C. D.). **Het Cholesterinegehalte van het bloed in Indië.** [The Cholesterol Content of the Blood in the Dutch East Indies.] —*Geneesk. Tijdschr. v. Nederl.-Indië.* 1922. Vol. 62. No. 1. pp. 1–4.

The author, who formerly considered the low cholesterol content of the blood as a specific property of the Malay race [this *Bulletin*, Vol. 9,

p. 260], has since altered his views and now joins VERHOEF [this *Bulletin*, Vol. 18, p. 262] in the opinion that it is caused by scarcity of fat in the diet. He found the cholesterol content in his recent experiments in better situated natives 0·11–0·15 per cent., *i.e.* significantly higher than in his former series in convicts. In native sufferers from tuberculosis a diet rich in cholesterol brought on a considerable rise of the cholesterol percentage of the blood.

W. J. Bais.

POLIDORI (V.). **Autopyothérapie par réinjection de pus stérilisé au chloroforme.**—*Bull. Soc. Méd.-Chirurg. Indochine.* 1921. Dec. Vol. 12. No. 2. pp. 153–157.

By means of Dieulafoy's aspirator about 10 cc. of pus is drawn from the abscess into a vessel of 150 cc. capacity. Two cc. of pure chloroform are added, a paraffined cork is inserted and the whole violently shaken for about five minutes. The chloroform is then allowed to act for some hours after which 10 cc. of normal saline are added. Pus thus treated has always shown itself sterile on culture. Five cc. or less is injected into the buttock every other day or even daily. The local and general reaction is slight. The author has employed this method in eight cases of abscess, two of chronic bronchitis with abundant expectoration and one of pyuria, and in no case has harm resulted. Two cases of abscess are cited in which recovery ensued without the use of the knife, but pus was withdrawn by puncture on several occasions. The mode of action is discussed.

A. G. B.

GRAVES (M. L.). **Systemic Blastomycosis.**—*Amer. Jl. Trop. Med.* Baltimore. 1922. Mar. Vol. 2. No. 2. pp. 123–132. With 5 text figs.

Three months before his admission to hospital the patient, a negro from Texas, had noticed a warty projection on the forehead, he suffered from headache and, probably, fever. A month later a series of abscesses appeared which were lanced and continued to discharge. On admission pulse and respiration were rapid and there was irregular fever; four abscesses were present and four discharging sinuses. Two days before death there were signs of commencing consolidation in the lungs. Blastomyces were obtained from pus drawn from unopened abscesses. At autopsy the lungs was found studded with very numerous pin-point to pin-head size grayish areas of consolidation. Microscopically these consisted of proliferation of connective tissue and epithelioids with numerous giant cells in which the blastomyces were found, showing up as a lightly stained rim with granular centre. The author believes systemic blastomycosis to be a rare disease.

A. G. B.

LEGER (Marcel), HUCHARD (G. L.) & BAURY (A.). **Un cas de Sporotrichose pulmonaire.**—*Bull. Soc. Path. Exot.* 1922. May 10. Vol. 15. No. 5. pp. 357–363.

The patient, aged 44, spent 2½ years on the West Coast of Africa in 1915–18. He was emaciated and complained of bouts of diarrhoea and bronchitis, night sweats and extreme lassitude. His fingers were hippocratic. The sputa were copious, mucoid or mucopurulent, sticky. Apart from slight dulness at the apices the physical signs were equivocal. The sputa were quite free from tubercle bacilli, inoculation of guinea-pigs was negative, but implantation on Sabouraud's test medium at laboratory temperature gave growth on the 5th and 6th day. The appearances on this and other

media are described, and the form of the fungus under the microscope. It was identified as *Sporotrichum beurmanni* (Matruchot and Ramond, 1905). Pulmonary sporotrichosis is, the authors write, very rare; they mention three other cases. The patient left before iodide treatment could be instituted.

A. G. B.

KRAUS (R.). **El problema de la etiológia y patogenía del bocio endémico y del cretinismo.** [The Causation and Pathogenesis of Endemic Goitre and Cretinism.]—*Rev. Inst. Bacteriolog.* 1919. Oct. Vol. 2. No. 3. pp. 309–323. With 22 figs.

This paper contains an historical review of the question of the causation of endemic goitre.

In the second part, on cretinism, the author lays stress on the fact that the mother of a cretin is often goitrous (the father, though similarly afflicted, appears to have no adverse influence); in fact, he goes so far as to state that goitre in the mother is probably the first step on the road to cretinism, that the child of such is predisposed to the disease of which the direct cause may be some infective agent, since in non-endemic districts goitrous mothers give birth to healthy children. No attempt is made to bring forward any fresh points.

H. Harold Scott.

CABRERA (Cristina) & WADE (H. W.). **On the Iso-Agglutination Group Percentages of Filipino Bloods.**—*Jl. Philippine Islands Med. Assoc.* 1921. May–June. Vol. 1. No. 3. pp. 100–102.

CONCLUSIONS.

"The results of iso-agglutination tests of 204 Filipino bloods reveal distinct differences from the Moss group-percentages of both Americans (Moffit's figures) and Chinese. The number of Group I (1 per cent.) is extremely low; that of Group II (14·7 per cent.) is roughly 10 less than Chinese and 40 less than American; that of Group III (19·6 per cent.) is practically intermediate between the American (6 per cent.) and the Chinese (34 per cent.), while that of Group IV (64·7 per cent.) is roughly twice as great as either of the others, two-thirds of all specimens instead of one-third. In other words, there is a much lower incidence of agglutinogen, and presumably—though this is not actually demonstrated by the technic used—a correspondingly greater incidence of agglutinins than in American and Chinese bloods. Since practically two-thirds of the Filipinos, being of type IV, are universal donors, that is, have blood that is not agglutinated by the serum of any group, the chances for harmless transfusion with untested bloods are much better in Filipinos than in Americans or Chinese."

TABLE I.—Group Percentages of Filipino, Chinese and American Bloods.

Group.	Filipino.	Chinese. LIU & WANG.	American. MOFFIT, etc.	Moss.
	204	1,000	1,122	100
	Cases per cent.	Cases per cent.	Cases per cent.	Cases per cent.
I (2)	1·0	10·0	4·8	10
II (30)	14·7	25·1	53·6	40
III (40)	19·6	34·2	6·2	7
IV (132)	64·7	30·7	35·4	43

A. G. B.

DA MATTA (Alfredo). **II. Estudo synthetico do abacateiro e da castanheira. Aspectos economico e medicinal. Analyse de seus fructos. III. Existem vitaminas no abacate e na amendôa Brasileira? Conclusão biologica affirmativa. Valor nutritivo de taes fructos por suas vitaminas e composição chimica; calorias que fornecem.**—*Brazil-Medico.* 1922. Jan. 21. Year 36. Vol. 1. No. 3. pp. 33–38. With 1 fig. in text.

Studies of *Persea gratissima* and its fruit, the avocado or alligator pear, and of *Bertholletia excelsa* and its fruit, the Brazil nut. Animal feeding experiments carried out by the author with both fruits proved their richness in water soluble (B) vitamin.

F. S. Arnold.

GARCIA DE QUEVEDO (Luis). **Nociones sobre las glandulas endocrinas y su importancia en la patologia tropical.** [The Importance of the Endocrine Glands in Tropical Pathology.]—*Bol. Asoc. Med. de Puerto Rico.* 1922. Apr. Vol. 16. No. 136. pp. 65–73.

Almost the whole of this paper is taken up with an exposition of the functions of the endocrine glands and actions of hormones. The application of this to tropical pathology is limited to a few lines and is disappointing; the examples given are supported by no evidence other than vague generalizations. Thus the fact that very few of the 17,000 recruits examined in Porto Rico during the late war exceeded 62 in. in height points, the author states, to "glandular deficiency," and is not due solely to heredity.

H. Harold Scott.

NOGUE, LEGER & HUDELLET (G.). **Un cas de leucémie lymphoïde à type splénique pur.**—*Bull. Soc. Path, Exot.* 1922. June 14. Vol. 15. No. 6. pp. 517–522. With 1 text fig.

Case of a mullah, beginning seven years before as a rapidly increasing tumour of the abdomen: antecedent syphilis denied, though Bordet-Wasserman reaction positive; alcoholism excluded.

On admission a tumour as big as a full-term foetus is observed and found to consist of an enormous spleen with a small contribution from an enlarged liver, the patient being emaciated and anaemic. Careful examination at all points reveals nothing else positive except diminution in number of red blood cells (2,190,000), polychromatophilia, an enormous preponderance of large lymphocytes (62·5 per cent. in a differential blood count), and an unusual proportion of small lymphocytes (25·8 per cent).

Antisyphilitic treatment had no effect. But X-irradiation of spleen, with subsidiary arsenic and iron, effected a remarkable improvement.

After six irradiations, each of quarter of an hour, extending over a term of about two months, the spleen is considerably reduced; the number of red blood cells is increased from 2,190,000 to 2,960,000; and of polymorphonuclear from 7 to 38 per cent., and the lymphocytes (large and small together) are reduced from 93 to 62 per cent., the reduction of the small lymphocytes being from 25·8 to 4 per cent.

The results of the X-ray treatment are already interesting, but the authors hope that continuation of the treatment will produce further benefit.

A. A.

DELANOË (P.). **De l'utilisation des tonneaux comme cages à animaux de laboratoire.**—*Bull. Soc. Path. Exot.* 1922. June 14. Vol. 15. No. 6. pp. 420–423. With 2 figs.

Description and figures of the conversion of an ordinary oil-barrel, laid on its side, into a cage for laboratory animals.

A. A.

i. WELLS (A. H.), AGCAOILI (F.) & FELICIANO (R. T.). **Philippine Rice.**—*Philippine Jl. Sci.* 1922. Mar. Vol. 20. No. 3. pp. 353–361.

ii. SALVADOR (Wenceslao). **The Food Value of Philippine Bananas.**—*Ibid.* pp. 363–366.

iii. NEVEU (Raymond). **Les richesses thermales de l'Algérie.**—*Rev. Méd. et Hyg. Trop.* 1922. May–June. Vol. 14. No. 3. pp. 74–81.

iv. COUBA (Louis). **Des propriétés du sapotillier.**—*Ibid.* pp. 72–73.

v. ——. **Piscidia érythyna. De l'emploi de la piscidia érythyna dans certaines contrés d'Haiti.**—*Ibid.* pp. 73–74.

vi. MACHADO (Renato). **A propos d'un cas de Rhinosclérome.**—*Ibid.* pp. 65–70. With 5 text figs.

vii. PURDY (J. S.). **A Laboratory for Tropical Research.** [Correspondence.]—*Med. Jl. Australia.* 1922. June 17. 9th Year. Vol. 1. No. 24. p. 682.

viii. ROUTH (L. M.). **Surgical Anesthesia among British Troops in the Tropics.**—*Amer. Jl. Surg.* (Anesthesia Supplement.) 1921. July. Vol. 35. p. 66.

ix. HENRY. **La psychologie des indigènes et la médecine Européenne.**—*Bull. Soc. Méd.-Chirurg. française de l'Ouest-Africain.* 1919. June. Vol. 1. No. 2. pp. 6–16.

x. ANIGSTEIN (Ludwik). [In English.] **Obserwacje nad** "*Vibriothrix zeulanica*" (**Castellani**). [Some Observations on "*Vibriothrix zeulanica*" (Castellani).]—Reprinted from *Bull. Acad. Polonaise des Sci. et des Lettres.* (Classe des Sci. Math. et Nat.) Sér. B.: Sci. Nat. 1920. Jan.–Dec. 6 pp. With 1 plate.

xi. IACONO (Igino). **Alcune osservazioni sulla** *Vibriotrix zeylanica* **del Castellani.**—*Riforma Med.* 1922. Jan. 9. Vol. 38. No. 2. p. 32.

xii. ——. **A Brief Note on** *Vibriothrix zeylanica* (**Castellani, 1904**).—*Jl. Trop. Med. & Hyg.* 1922. Apr. 15. Vol. 25. No. 8. p. 100.

xiii. NICOLAS (Ch.). **L'Essence de Niaouli menacée dans sa production en Nouvelle-Calédonie.**—*Bull. Soc. Path. Exot.* 1921. July 13. Vol. 14. No. 7. pp. 396–397.

i. Gives tables with results of analysis of many varieties of rice and a comparison of Philippine rice with U.S.A. rice.

ii. Gives data of analyses of fruits of 12 varieties of banana.

iii. Algeria is rich in hot springs. The author classifies them as alkaline, sulphurous, ferruginous, saline, aerated, and simple, and states that there are 22 in Oran, 51 in the Algiers Department, and no less than 125 in Constantine. Details of the best known springs are given.

iv. A short account of *Achras sapota*, the Sapodilla plum and its medicinal properties.

v. *Piscidia erythrina*, the dog-wood of Jamaica, is a leguminous tree. It is believed to be used by the native of Haiti to poison his enemy, but the author seems to make fun of the tradition.

vi. According to the author rhinoscleroma is very rare in Brazil, though there appears to be a belief to the contrary. The patient was a negro, whose age is given as 118, and the affection of the nose had existed 22 years. It was complicated by myiasis. The condition improved with radium treatment, and a trial of tartar emetic was frustrated by the patient's death.

vii. A plea for the study of tropical diseases at Sydney University.

viii. A reprint of an article which appeared in the *Brit. Med. Jl.* in 1919 and was noticed in this *Bulletin*, Vol. 16, p. 225.

ix. An article containing nothing unfamiliar to those who practise among native Africans.

x, xi, xii. This organism and its reactions are sufficiently described in this *Bulletin*, Vol. 15, p. 308, and Vol. 16, p. 241.

xiii. The author refers to his paper on the essence of Niaouli and its uses in New Caledonia [see this *Bulletin*, Vol. 16, p. 244]. He here records that the existence of the tree is menaced by a fungus which began to attack it in 1919. He fears that the plant may become extinct.

A. G. B.

ALFONSO BLANCO (Ramón). **Apuntaciones prácticas sobre Parasitismo intestinal.** —*Gac. Med. de Caracas.* 1921. Nov. 30. Vol. 28. No. 22. pp. 341–345.

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[See this *Bulletin,* Vol. 20, p. 197.]

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YAKIMOFF (W. L.), JOUKOWSKY (A. A.) & SCHIRWIND (S. L.). **Epidémie d'angine de Vincent.**—*Bull. Soc. Path. Exot.* 1921. Dec. 14. Vol. 14. No. 10. p. 631.

—— & WASSILEWSKY (W. J.). **Action du "Dissodoluargol" de Danysz et de "l'Arsolan" sur le bacille de Pfeiffer et la pneumocoque.**—*Bull. Soc. Path. Exot.* 1921. Dec. 14. Vol. 14. No. 10. pp. 630–631.

REVIEWS AND NOTICES.

PHYLACTOS (Adrien). **Lymphogranulomatose des Ganglions Inguinaux (Ulcère vénérien adénogène). Ses Rapports avec le Bubon Climatérique.**—204 pp. With 1 plate. 1922. Villefranche: Imprimerie du "Réveil du Beaujolais." 9 et 9 bis, rue Pierre-Morin. [Price not stated.]

In introducing his subject the author premises that in recent years considerable progress has been made in our knowledge of the pathology of the lymphatic system, the obscurities formerly surrounding it having in great measure been cleared away by close co-operation between clinic and laboratory. Remarkable results have in this way been achieved, and the rôle formerly attributed to tubercle and certain other infections as aetiological factors in glandular pathology found to have been far too extended.

The affection first described in 1913 by MM. DURAND, NICOLAS, and FAVRE under the provisional name of "Sub-acute Inguinal Lymphogranulomatosis" is cited as a case in point, and with the various aspects of this disease, historical, aetiological, clinical and pathological, the book proceeds to deal. Stress is laid throughout upon the identity of the malady with "Climatic Bubo," an ailment of hitherto unexplained aetiology which has long remained on the hands of tropical practitioners as an unsolved problem.

"Inguinal Lymphogranuloma" has been the subject of careful and prolonged observation and research in the clinic of M. FAVRE at the Hôtel Dieu de Lyon and in the Bacteriological Institute of that city, the work under review being largely an exposition of methods followed, theories advanced and to some extent proved, and conclusions arrived at by that distinguished physician and his collaborators. The disease is one of adult life, its maximum of frequency coinciding with the period of sexual activity. It is rare in women, unknown in children. Developing slowly as a subacute adenitis with periadenitis of the inguinal and iliac glands it progresses in an indolent and torpid fashion. The inflamed glandular mass never undergoes total destruction, but tends to present small localized points of softening and suppuration which may serve as the starting points of long-persisting fistulae. The prognosis is favourable but the disease by its long duration, its chronicity, and its intractability to treatment, is of serious local gravity and the cause of much disability. Its non-tubercular nature and its independence of the common pyogenic bacteria are satisfactorily demonstrated. Upon its venereal origin the author is insistent, as well as upon the fact that careful and systematic examination and observation will disclose the frequency of antecedent genital lesions, cutaneous rather than mucous, through which the virus of the disease has penetrated. These lesions, usually minute and often only of ephemeral duration, are not uncommonly missed or overlooked, but they are generally of a very definite and distinctive type. Of their histopathology and of that of the affected glands a detailed and careful description is given.

The school which the author represents regard the disease described as a fourth venereal affection, distinct from syphilis, soft chancre and gonococcal infection, from one and all of which the differential diagnosis presents no difficulties. Facts and arguments are adduced which certainly go a long way in proof of this contention. To the common form of primary lesion the name of "lymphogranulomatous chancre" is applied, but it is noted that a mild non-gonococcal urethritis is sometimes the initial manifestation. The disease may in rare cases run its course concurrently with other venereal infections, but in the absence of such association the results of bacteriological and protozoological investigations (including cultures and inoculations) may be taken as invariably negative. Attention

is, however, specially drawn to the presence in abundance in the walls or cavities of the small glandular abscesses already mentioned, of refringent cellular inclusions, very evident in sections of the glands treated by special staining methods. These are suspected of possible parasitic significance, but may on the other hand represent nothing more than nuclear debris. The result of further investigation of this point will be awaited with interest.

There are no specific remedies. Rest, radiotherapy, and surgery represent the lines of treatment indicated. Early surgical intervention probably offers the best prospect of rapid recovery, ablation of the affected inguinal glands being followed by resolution in the iliac group.

The opinion is advanced and in great measure substantiated that "Lymphogranuloma" is one of the most common forms of adenitis observed in adults: that it has a wide distribution in torrid, temperate, and even frigid regions, and is in fact ubiquitous. The author does not appear to lay personal claim to tropical professional experience, but a very careful study of the literature of "Climatic Bubo" has evidently been made, and much weight of authority is quoted in support of the argument that "Lymphogranulomatosis" and "Climatic Bubo" are one and the same disease agreeing alike in constitutional and local manifestations. The necessity of distinguishing between climate as a predisposing and contributory factor and as an actual causative agent is emphasized, and the fact that "Lymphogranuloma" is most frequent in hot and tropical climates is held to constitute the whole secret of "Climatic Bubo."

No information is furnished by the author (probably because none was available) regarding the proportion or frequency of cases of "Lymphogranuloma" which do not proceed to softening or fistulization, but slowly resolve under expectant treatment even when radiotherapy is unobtainable. Progress of this nature has long been looked upon as one of the leading features of "Climatic Bubo," and a doubt will still exist in the minds of many tropical observers whether the nature of all the glandular conditions classed under that head has been completely elucidated, though with the reviewer they may admit that light has been thrown on the probable aetiology of the considerable proportion of such cases the innocence of whose origin has been the subject of not unnatural scepticism.

The book well repays perusal in spite of the author's tendency to iteration. Interesting details of cases are furnished, and the copious bibliography appended testifies to the industry and care expended on its production.

J. J. Pratt.

BERNARD (P. Noel) *et al.* **Centenaire de Louis Pasteur 1822-1895. Les Instituts Pasteur d'Indochine.**—249 pp. 1922. Saigon: Imprimerie Nouvelle. Albert Portail.

We have here—a fitting tribute from the savants of the Far East to the Master's centenary—a most interesting account of the Institutes at Saigon and Nhatrang that bear the name of Pasteur. These institutions, which came into existence independently as instruments of the local government—Saigon in 1890 under CALMETTE, Nhatrang under YERSIN in 1895, were directly affiliated to the Pasteur Institute of Paris in 1904-5, as the Pasteur Institutes of Indo-China.

Although neither institute is exclusive in its scope Saigon is more particularly identified with antirabic operations, anti-variola vaccination, antivenenes, and medical affairs, Nhatrang with antiplague work and with veterinary interests.

Since its installation under CALMETTE as a modest adjunct of the local army hospital the institution at Saigon has undergone the usual reconstructions due to growth. As a Pasteur Institute it is now housed in three large two-storey buildings (with the necessary annexes for animals, etc.) containing, respectively, the laboratories of microbiology, vaccines, and

chemistry. The scientific staff includes a director and the respective chiefs (each with a European deputy and native assistants) of the four departments of medical microbiology, vaccines, animal microbiology, and chemistry, the chemical department also including a sectional chief for the somewhat extraneous subject of economic vegetable products.

The institute at Nhatrang was an immediate outcome of YERSIN's great discovery of the plague bacillus and began as a modest depot for the preparation of antiplague serum. It is now an immense establishment, where antiplague and anticholera vaccines and many therapeutic and diagnostic serums in use in medical and veterinary practice are manufactured on an extensive scale. Courses of practical instruction for junior veterinary officers and young native subordinates of the veterinary department are given also. The scientific staff includes a director and the chiefs (each with a European deputy) of the two departments of animal microbiology and chemistry. The biological laboratories are housed in a large two-storey building that forms the front of a quadrangle of stables and stalls. The chemical laboratories are situated at Suoi-Giao, 19 km. distant, on the plain, a forest reserve of about 1,200 acres where also there are cattle-parks and stables, and plantations of cocoa, coffee, rubber, and other plants. Also attached to the institute is the hill station of Hong-Ba, about 30 km. from Nhatrang, which is to be developed as an acclimatization station for interesting plants and a meteorological observatory. There are very few mosquitoes and no anopheles at this charming hill station.

A most pious feature of this centenary tribute is the summary and analysis of the original work accomplished and published by the Pasteur Institutes of Indo-China since their inception. This, which is classified under 39 headings and completed by a bibliographic index, ranges over the whole field of tropical medicine and hygiene—a magnificent record for a country so far from Europe and so recently recruited to European science. We may signalize here, without offence to the successors of those worthy disciples of Pasteur, the work of CALMETTE on snake-venoms and antivenenes, on the production of a rabic virus and of a small-pox vaccine suitable for general use in Indo-China, on Chinese yeast, on dysentery; and on the local drinking water; and the work of YERSIN, so admirably summarized in this volume, on plague. In a new sense we may well apply to the alumni of the Pasteur Institute in Indo-China the old saying "coelum non animum mutant qui trans mare currunt."

A. Alcock.

DANIELS (C. W.) [M.B., F.R.C.P., formerly Director of the London School of Tropical Medicine; Consulting Physician Hospital for Tropical Diseases] & NEWHAM (H. B.) [C.M.G. M.D., Director of the Department of Tropical Pathology and Warden of Studies, London School of Tropical Medicine]. **Laboratory Studies in Tropical Medicine.** 5th Edition. Thoroughly Revised. pp. xiii + 576. With 7 plates & 184 figs. 1923. London: John Bale, Sons & Danielsson, Ltd., Oxford House, 83–91, Great Titchfield Street, W.1. [Price 25*s*. net.]

The new edition of this well-known manual will be read with interest.

Chap. I (27 pages) deals with the laboratory and its equipment, and in the main follows the lines of the preceding edition. There is an additional section wherein the methods of housing, feeding and breeding the various laboratory animals are described in a most practical manner.

Post-mortem examinations, and the preparation of tissues for section cutting, etc., receive 17 pages in Chap. II.

Chaps. III–VI (73 pages) include the study of normal and abnormal blood conditions. The statement that large mononuclear leucocytes contain red staining granules, which are not found in lymphocytes (large and small), will not meet with general acceptance. Moreover, the

beginner is likely to seize on such an easily determined character for the recognition of large mononuclears, a method of diagnosis which will give results widely differing from those obtained when other tests are applied. Plate VI must have been reproduced from a poorly stained blood smear, and gives an inadequate representation of blood corpuscles. The cell labelled "transitional" bears no resemblance to the description in the text. The various steps in a Wassermann reaction are described clearly and in detail, but there is no mention of the Sigma test, which would commend itself to the single-handed worker by reason of its simplicity.

The blood protozoa are allotted 69 pages in Chaps. VII–IX. Most of the material is reproduced from the preceding edition, but the subject-matter has been rearranged, with additions, and the section on Spirochaetes is new. This includes the NOGUCHI-WENYON method of culture, and the use of the "bleeding box."

DOBELL's descriptions of the amoebae of man are followed in the chapters on intestinal protozoa, and his figures of these parasites are clearly reproduced. The same author's illustrations of the Coccidia occurring in man are an excellent addition.

Chap. XIII (urine) includes CHRISTOPHERS and STEPHENS's method for estimating quinine in the urine. The ordinary man would find the acid Tanret test invaluable in deciding whether cases under treatment are absorbing the quinine administered. Also, the precipitate in the urine can be diluted and an idea of the quinine content obtained by comparison with standards containing known amounts of quinine, on the principle adopted in standardization of vaccines by turbidity tests. Such a method of estimation might not meet with the approval of the bio-chemist, but it is quite sufficient for clinical work.

Bacteriology, including the preparation of media, isolation of organisms from blood and faeces, agglutinations, etc., receives 57 pages in Chap. XIV, which will enable the learner to face confidently any examinations likely to be required. The short Chap. XV gives directions for measuring microscopic objects, including a useful account of the camera lucida.

In Chaps. XVI–XVIII (70 pages) the parasitic helminths of man are described in sufficient detail for the purposes of the book. Looss's figure of a male and female *Schistosoma*—which time cannot wither nor custom stale—is included, and is labelled *S. haematobium*, but the species depicted is surely *S. mansoni*. The authors follow the curiously prevalent custom of writing "*Microfilaria bancrofti*" and "*Microfilaria loa*." Any zoologist unfamiliar with the group would in consequence suppose these worms to be species of a genus *Microfilaria* !

Here the reader twitches his mantle blue and enters on the fresh fields of the Arthopoda, to which the remainder of the book (161 pages) is devoted. Parts of this division have been rewritten, notably the chapter on the classification of mosquitoes, for which the authors draw largely on Colonel ALCOCK's standard treatise. Unfortunately some other parts have not been similarly revised, but remain strongly tinctured with the traditions of an earlier dispensation, and elusive genera and other groups crop up which, like Bacon's *Idola Fori*, have only their names as evidence of existence. The chapter on dissection of mosquitoes is excellent. A clear description of the procedure for displaying the genitalia of Glossina is a useful addition to the section on this genus, but it is a pity that the authors have seen fit to include in their table of tsetse-flies only nine species, and one of these of very doubtful validity.

There is some confusion in setting out familial and generic characters. Thus, the Muscidae are stated to have four visible abdominal segments. The application of such a diagnostic test would exclude, for a start, the most important genus in the family—*Glossina*.

The foregoing indicates sufficiently the scope of the book. It contains much excellent matter, and the student who familiarizes himself with its teachings will possess a good basis for laboratory work. At the same time the method of instruction sometimes appears unnecessarily diffuse, and there is much needless repetition. Further, various zoological groups

are not always given the same designation, nor are terms always applied in the same sense. For example, the definition of Culicidae, on p. 446, admits the Corethrines, whereas that on p. 397 excludes them. On p. 222 the Sporozoa are divided into Neosporidia and Telosporidia, but Coccidiomorpha and Gregarinida are the subclasses recognized three pages further on. Whether these discrepancies result from insufficient revision, or are a deliberate halting between two opinions, they are likely to confuse the beginner. No system of classification, nor any other human performance, can be expected to obtain universal approval. Besides the tolerant critic, the "selfconceited Brethren who give liking unto nothing but what is framed by themselves and hammered on their anvil" are likely to be active, as they were against the translators of King James' Bible. Consequently, since finality is impossible, it would surely be better to select whatever zoological grouping seems most suitable, and adhere to that throughout, leaving the quiddities and quillets to the austere zoologist.

The publication of a fifth edition of this manual is sufficient evidence that it supplies a recognized need, and the reviewer is happy to acknowledge his indebtedness to an earlier edition for valued assistance. He considers, however, that by judicious compression and further revision its usefulness and scope could be greatly increased without any departure from the object of the authors.

W. P. MacArthur.